“THE FAR EASTERN REVIEW” – CHINESE RAILWAY CONSTRUCTION

A COMPREHENSIVE STUDY OF HISTORICAL REFERENCES WITHIN THE LIFE OF THIS JOURNAL OF THE DEVELOPMENT & CONSTRUCTION OF CHINA’S EARLY RAILWAYS, INCLUDING EXTRACTS OF RELEVANT PAGES (**SECTION 4 of 15)**

BY PETER A. CRUSH

For Introduction please see preface to SECTION 1 covering Vols I - V

Summary of Chinese Railway Related Content

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Volume XI

June 1914

Mr Liang Tun-Yen, Minister of Communications (frontispiece portrait)
Summer Train Rates in China
The New Minister of Communications
The Sino-Belgian Company
New Railways for Shantung
Railway Around Peking
Kowloon-Canton Railway
Shanghai-Nanking Railway
Penchihu-Niuhsintai Light Line
New Station at Changchun
South Manchuria Railway
Personal - Rigby promoted District Engineer.

July 1914

Proposed Railway from Nanking to Pinghsiang - Surveyor's Report, 6 photos & 1 map.
China's Railway Accounting Department
The Shasi-Shingyifu Railway
Receipts & Expenditures of Chinese Railways
Changes in the Ministry of Communications
Shanghai-Hangchow-Ningpo Railway - Nationalization of the Lines - Full report. 16 photos.

Hulutao as a Chinese Port - Map and details of the connecting railway. 10 photos & 1 sketch map.
Railway Development in Mid China - The question of expanding the Tao-Ching Railway. 13 photos & 1 sketch map.
Express Service Shanghai-Peking via Pukow
Shanghai-Nanking Railway
Chefoo-Weihsien Railway
Canton-Hankow Railway
Chekiang Railway
Kirin - Changchun Railway
Pukow-Singyang Line
Personal - J.E. Foley, K.H. Chen & Mr Stells,* T.W.T. Tuckey * probably Steele)
South Manchuria Railway Co.- Accounts for 1913

August 1914
Development of Dairen - Activities of the South Manchuria Railway Co. 21 photos and sketch plan of Shakako Workshops.
Peking / Pekin Syndicate - Board compliance with new laws on registration of foreign enterprises in China.
Trans-Siberian Railway - New through-booking services from Shanghai.
Kirin-Changchun Railway
Nanchang--Kiukiang Railway
Lanchowfu to Kuldja (Guliweizi 古里圩孜, Xinjiang) A Belgian syndicate had signed a contract for construction of the 1,850 mile-long line.
American Railway Material - Canton-Kowloon Railway railway equipment orders.
Shanghai-Nanking Railway Traffic figures for July.

September 1914
Dr. Adams and Railway Accounts Adams, an advisor on standardizing accounts had returned to USA having submitted a report.
China's Railways and the War Editorial discussion on whether the world war would likely interrupt financing and construction of China's railways.
Canton-Hankow Railway Report that funds for construction had become available & would proceed under Jeme Tien-yu.
Peking-Mukden Railway Accounts for half year.
Canton-Hankow Railway Consular Report
Shanghai-Nanking Railway Traffic figures.
South Manchuria Railway August figures.
Personal : F. K. Tsao and A.W.U. Pope

October 1914
Types of Locomotive - Henschel and Sohn 4 photos of engines for China, Japan & Asia
Japan & the Shantung Railway - Contention over control of the German-built Shantung railway between China and Japan.
Bridge over the Yangtze Suggestion made to build a bridge for road and railway.
Kowloon-Canton Railway Estimates submitted to Hong Kong Legislative Council.
Hu-Hang-Yung Line Staff Appointments : A.C. Clear, H. Middleton, J.D. Read, E.J. Dunstan.
Kaifeng-Hsuchowfu Line Rumours of standstill in construction work.
Swatow-Chaochow Railway Passenger receipts.
Shanghai-Nanking Railway Traffic figures.

South Manchuria Railway First standard gauge locomotive manifested at Shahokou Works.

November 1914

The Status of the Shantung Railway Editorial discussing the Japanese seizure of this line from German control.
Shantung Railway Précis of the history of the line. 13 photos and 1 sketch map.
Supplement - Texts of German Concession for Shantung Railway, including Kiaochou-Tsinanfu Railway Agreement , British & German Agreement re railways in China and the Tientsin-Pukow Rly. construction & loan agreements.

December 1914

Dr Sun Yat-Sen's Railway Programme - A Defence A long editorial by the Publisher, (Geo. Bronson Rea) discussing Sun's railway plans. Rea had been appointed by Sun as "Technical Secretary to the Chinese National Railway Corporation" (but in reality as an adviser) and had since come under personal attack from other countries' (jealous?) railway engineering professionals. (My note: At this time many Western nations were participating in an ongoing current power struggle to carve up China into areas of influence or outright territorial concessions. They sought to have their railway experts appointed as advisers to the Chinese Government. The objective was have their own country's railway systems adopted as China's national standard..... with all the trading opportunities this would bring for the supply of equipment).
Engineering in China Extracts from an Address by A. C. Clear , President of the Engineering Society of China. This is an editorial discussing suggestions from some quarters that the British dominated society was seeking to coerce China in adopting British engineering standards for all or most of China's railways. Various railways are discussed .
Shantung Railway Report of the cargo carried in the line in 1913.
Tsinanfu- Map of City, Suburbs and Settlement. This double -page map shows the lines of the Tsin-Pu (津浦) and Kao-Chi (膠濟) railways (to Tientsin and to Tsingtao respectively) entering Tsinan . The "New West station" & Tient-Pu Rly station are near the new Settlement and the North West Station, which is on the Kiao-Chi Line, is close to the north-west gate of the old walled-city.

January 1915

Full-page Advertisements for The Line of a Hundred Pagodas (Shanghai-Nanking Railway)
Shantung Railway & Tao-Ching Railway
Cheng - Tai Railway & Peking - Kalgan Railway
Kirin-Changchun Railway
Tientsin-Pukow Railway Administration
Editorial : Publisher Geo Bronson Rea expands his criticism of the British Engineering Society in a long multi-page rant about the "evidence" he had unearthed proving the society was a front for eliminating any competition to British dominance over engineering expert "advice" and supply of engineering technology to China. He also alludes to Britain's attempts to discredit foreign advisers appointed by the Chinese government unless they were British as well as declining to accept qualified Chinese as equals and appointing them to senior positions (such as on the Chinese railways which Britain had obtained contracts for building and operating). It is ironic that Rea

concludes that "the first duty of an honourable adviser is to place China's interests above all else.... and whole-heartedly espouse its cause" .... and yet a decade later Rea was serving Japan's interests as a vocal propagandist and an Manchoukou "adviser" while they were grabbing Manchuria.
Status of The Chinese National Railway Corporation
Full text of a report submitted to the corporation by G. B Rea who had been employed for a year as an adviser but who had termed himself as "Technical Secretary". He had requested this title himself in order to avoid antagonism from engineers of other nationalities, all eager to be appointed as railway experts and advisers to the Chinese government.
S.M.R Locomotive - Standard gauge Railway Engine. A drawing and photo of the first standard gauge locomotive designed and built by Japanese engineers. This engine had started trails after being built at the SMR's Shakako Works near Dairen (Dalian) . One list of dimensions & specifications also included.

February 1915
Chinese Railways and the War Report stating that the world war had impaired the financial results of China's railways in the past year due to falling freight traffic.
Lung-Tsing-U-Hai Railway Extension from Kaifeng to Kweichou completed.
China's Railway Loans The government had met its loan interest commitments in spite of difficult months.
Railway Profits A net profit of $12 million had been made.
Szechuan Railway - Permission had been granted to establish a bank.
Railway & Telegraph Materials A commission had been established to study the economical use of these materials.
Szechuan Railway Shareholders had complained of misappropriation of funds.
Tientsin-Pukow Railway (Northern Section) A report that the British wished to take over the German loan interests.
Peking-Hankow Railway Net profits for the year 1913 had been announced.
New Russian Railway Concession in China A report from Japanese sources that Russia had obtained permission for a railway between Aigun and Tsitsihar (Qiqiha'er 齐齐哈尔**).**
Kalgan and Sui-yuan Railway Construction was progressing.
Railway Conference. A conference had been held in December between the major railways about traffic arrangements. Those attending named.
Chefoo-Weihsien Railway Local gentry & merchants were to petition the government on the importance of this proposed line.
Railway Fortifications The army wished to fortify certain places on the PMR.
Chihli Railway Project Local gentry were promoting a new line between Wen An Hsien and Liang Hsung Hsien.
Nanking-Changsha Railway This projected new line would be divided into several sections. Mr Sun Tau-yuei (Clarence Sun) had been appointed as Managing Director at Nanking
South Manchuria Railway An agreement had be signed for a feeder line to the Penchihu colliery.
Canton-Hankow Railway Repairs to this railway were progressing after the revolution.
First Standard Gauge Railway Engine A further report about this SMR-built locomotive on trial.

March 1915

The Struggle for the Manchurian Railways A long editorial summarizing the history of foreign encroachment on China's territory in Manchuria and the building of railways,...covering Russia with its Chinese Eastern Railway (CER ; the Japanese seizure of the southern branch line of the CER on the Liaotung Peninsula; the German colony on the Kiaochau Peninsula in Shantung, followed by their expulsion by Japan and then new additional demands on railways rights by Japan etc. etc.

Revised Map Showing Japan's Demands. A large fold-out map showing China's existing as well as projected main rail lines.

The Chung Hsing Coal Railway (a.k.a. the Tai-tsao Railway) a 27 mile line from Taierchwang to Tsao-Chwang in Shantung Province.

Tsingtao-Tsinan Railway (Shantung Railway) Report that the railway had reopened to traffic after repairs.

Kiukiang- Nanchang Railway A section of the line had opened from Tukiapu near Nanchang.

Kuangsi-Szechuan-Yunnan-Kueichow Railway Funds were being raised.

Sin-Chuen Railway Canton merchants were planning a railway to connect Canton-Kowloon Railway at Chun Shan.

Aigun-Tsitsihar Railway The projected line would cost $20 million to build.

Peking-Hankow Railway A loan was being raised for extending the line.

Chinchow-Taonanfu Railway Kuo-Shulin had completed the survey for this proposed line.

Kirin-Changchun Railway Traffic returns

South Manchuria Railway Traffic Returns & Estimates.

To Bridge the Yangtse a railway bridge at Hankow was being contemplated.

Railwaymen to Meet A convention was being planned between China & Japan.

Szechuan-Hankow Railway Track laying reported in progress.

April 1915

China's Most Interesting Railway Report of the opening of the extension of the Peking-Kalgan Railway's extension to Tatung (Datong) with through trains to Fengtai.

S.M. Railway Colonists The company's Land department was importing Japanese agriculturists for the Tiehling area.

May 1915

South China Railway Situation The U.S Consul in Hong Kong reported that the European war had showed down all further railway development in southern China including the Canton-Hankow line and Kochiu (Gejiu 个旧) tin mine railway from Mengtse (蒙自 *Mengzi*) in Yunnan.

China's Railway Forests Short report about afforestation along the Kin-Han Railway & plans for similar along the Tienstin-Pukow railway.

Chinchow-Chaoyang Line An editorial discussing the conflict of railway interests between the British and the Japanese . [My note: the writer (probably publisher & editor Geo. Bronson Rea) displays his bias against the British in favour of the then current Japanese viewpoint by writing "*some Britishers betray their excessive eagerness to trespass upon Japan's sphere of influence not only in Mongolia but also Shantung*"..... but not a word about trampling over China's sovereignty and her interests. If this was Rea writing, he is already hinting of his future support and propagandas' in favour of Japan's growing aggression against China]

Push on to Fengchen The Kalgan-Suiyuan Railway, already at Tatung was expected to be pushed to Fengchen (丰镇) that year.
Nanking-Honan Line The "China Post" reported that surveys from Nanchang were beginning towards Changsha.
Government Help Wanted The Kwong Tung Yueh Han Railway was in financial distress and asking for help.
Canton-Hankow Railway Construction was being pushed on the section between Canton and Wushih (乌石)
Ching-Han Railway Rolling Stock Rolling stock on the Peking-Han Rly reported as total of 1,500 cars and trucks.
Nanking-Kiangsi Line Thisi projected line would be started in the near future.
Iron Ring for Peking Scheme for a round-city wall railway submiited to the President.
Light Rail in Tungshan The Chinese of the district planned a light rail line connecting their district with Tunghua and Heiluncheng.
Sungari Takes Bridges Many bridges had been washed away by flood in the Changchun area.
Mukden Terminal Station The PMR station would be constructed on its present site outside the West gate.
South Manchuria Railway Traffic Returns
Exchange of Notes Respecting the Lease of Port Arthur & Dalny and Terms of the South Manchurian and Antung-Mukden Railways Text of agreement between China and Japan.

MR. LIANG TUN-YEN, Minister of Communications.

another shed of similar size and a number of other buildings. The car shed is a steel building, and was built by the Yur Sing Factory. The building was designed to give every facility for the efficient maintenance of the cars and is up-to-date in every particular.

THE POWER HOUSE

The power is supplied by the old Power Station of the Shanghai Inland Electric Light Company. It contains two engines of 100 kilowatts each, which served up to 1910 for the lighting service of this Company. In that year they were taken out of service because a new station near the Arsenal was opened. The engines were overhauled and fitted for the tramway work by adding a storage accumulator battery and booster of the Pirani-Siemens-Schükert system. The battery and the booster prevent the fluctuations of the current taken up by the cars, from influencing the dynamos and steam engines and besides that, the battery can keep the cars going for some time, in case of a breakdown of the steam engine or dynamo.

The dynamos supply a voltage of 550 volts to the trolley wire, and each engine is capable of driving from 18 to 20 tram cars on the speed at which they are run at present.

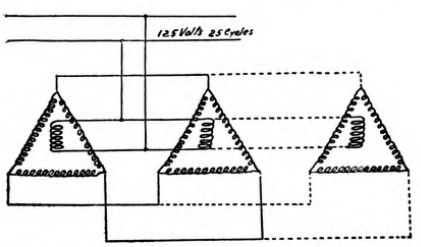
THE TRAFFIC

The traffic on the line has largely exceeded the estimates that were made originally, and the cars, especially the second class, are always crowded with passengers.

SWITCHBOARD SIGNALLING IN THE WORLD'S LARGEST POWER STATION

In the mammoth power stations of the present day, the generators are very often remote from that wonderful piece of mechanism, the modern switchboard, yet no time must be lost in transmitting instructions from the switchboard to the operator in charge of the big machines. The high standard of service maintained by the large power companies makes it imperative that the signal system for transmitting such instructions be so reliable that the probability of an error is eliminated.

In the world's largest power house, the Keokuk generating station of the Mississippi River Power Company, it is more than 800 feet or nearly one-sixth of a mile from the switchboard to the most remote generator and no part of the generator room is visible from the switchboard owing to the fact that the latter is installed in an upper story. For this reason, no efforts were spared to make the signal system as dependable as possible.



Diagrammatic representation of motor connections.

Transmitters and receivers are installed on each benchboard, the number corresponding to that of the generators controlled by it and also one receiver and transmitter is placed beside each generating unit. The left hand dial of each switchboard set is the transmitter, while the upper dial of the pedestal set is the corresponding receiver at the generator. The lower dial of the pedestal set is the generator attendant's transmitter, while the right dial in the switchboard set is the corresponding receiver.

The transmitter of the switchboard set is operated by means of a handle, pointer, and dial mounted on the front of the benchboard and concentric with the hand wheel which operates the field rheostat of the corresponding generator, the motion which sets the pointer of the transmitter at whatever signal it may be desired to transmit being communicated to the transmitter by means of a cable and pulley arrangement. the pointer of the corresponding receiver in the generator room instantly points to the same signal.

The synchronous motion of the pointers of the transmitter and receiver is secured by means of small induction motors each provided with a three phase delta connected stator winding and a single phase rotor winding of the shuttle type, the windings being exactly alike in all the machines, and corresponding dials having their signals at exactly the same points with respect to the winding.

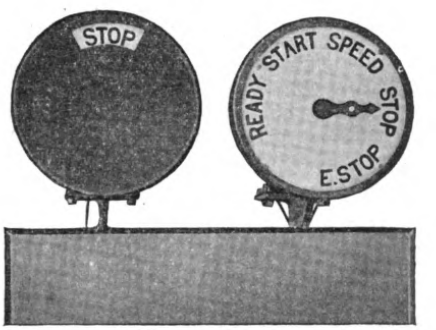
Motors for corresponding transmitters and receivers have their stator windings connected in multiple, but not excited except by induction from the rotor winding. The rotors are also connected in multiple and excited from a single phase source. With two motors connected thus, any motion of the rotor of one is accompanied by a corresponding motion of the rotor of the other. Thus each will always bear the same relative position to its stator winding So, in sending signals, the rotor of the transmitter is turned so that the hand pointer on the dial points to the signal it is desired to send and the rotor of the connected machine or machines instantly moves around so that the hand on the dial of the receiver also points to the same signal.

The rotors are excited from a 25 cycle, 125 volt circuit with provisions for automatically throwing them across an auxiliary supply circuit in case of failure of the main source of supply.

Double push button switches are located on both sides of the transmission handles, and serve to operate signal lamps, whistles and bells.

To send a signal, the switchboard operator turns the handle to the signal he wishes to send, this action moving the pointer on the dial of the transmitter, and, consequently, the pointer on the dial of the receiver at the generator stand, so that they both point to this signal. He then pushes a button on the right of the transmitting handle, thus lighting a lamp on the generator whose operator is being signalled to and also blowing a whistle to attract his attention.

Transmitter and receiver at generator.



Transmitter and receiver for mounting on benchboard in switchboard room.

As soon as the operator at the machine has read the signal, he turns the handle of his transmitter to the same signal, thus transmitting the signal he has received back to the switchboard operator as a check. Then he presses the button at the right of his transmitting handle, thus extinguishing the lamp and cutting out the whistle; after which he presses the button at the left of the handle so as to light a lamp in the switchboard room and ring a bell there to attract the attention of the switchboard operator, who, after checking the signal, presses the button at the left of the transmitter handle extinguishing the lamp and cutting out the bell.

This completes the sending and checking of a signal.

The devices for sending checking signals as outlined above were manufactured by the General Electric Company, Schenectady, N. Y.

MOTOR CAR SERVICE IN SOUTH MANCHURIA.

A group of Japanese residents at Pulantien are planning to form a company to start a motor car service between Pulantien and Pitsuwo. The company is to be capitalized at Y20,000 in shares of Y50 each to be paid in quarterly instalments. The departures from each end will be twice daily, the accommodating capacity of the motor car being 16, A journey between the two places can be completed in two hours.

SUMMER TRAIN RATES IN CHINA

Special Excursion Rates are now in operation over the following Railway Lines mentioned below. On the Tientsin-Pukow Railway 25 per cent. reduction on single journey rates; available till September 30. On the Peking-Mukden Line reduction tickets issued at one fare and a third to Peitaiho, Tangho and Shanhaikwan, rates available till September 30 for return at any time up to October 31. On the Shantung Railway from Tsinanfu to Tsingtau, return tickets are issued at a reduction of 25 per cent. on the Single Fares, rates being available up to September 30 Tickets can be obtained from Messrs. Thos. Cook and Son.

THE HWAI RIVER CONSERVANCY COMMISSION

On December 27, 1913, a Presidential Mandate established the National Irrigation and Water Conservation Bureau of China, with Mr. Chang Chien, Minister of Agriculture and Commerce, as its head. This was in response to a memorial from Mr. Hsiung Hsi-ling (then Premier) and Mr. Chang Chien pointing out the necessity of properly investigating and dealing with the irrigation and conservation problems with which the Government was constantly confronted. Events then began to move quickly. On January 30, 1914, a preliminary agreement was signed by the Chinese Government and the American Minister at Peking by which the American National Red Cross consented to take steps to secure the flotation of a Hwai River Conservancy Loan of $20,000,000 U.S. Currency at 5 per cent., or such sum as was found necessary after complete surveys had been made.

Soon after this agreement was signed Mr. C. D. Jameson, who in 1912 prepared a comprehensive report on the Hwai River district for the Red Cross,* left China to put the scheme before the American authorities. The American Red Cross, not being a business organization, could not itself undertake the actual financing and engineering work, but it recommended the eminent firm of Messrs. J. G. White and Co. of New York and London.

In the meantime in accordance with the preliminary agreement, the position of Engineer-in-Chief and Chairman of the American Red Cross Board of Engineers on Chinese Conservancy, was offered to and accepted by Colonel William L. Sibert. A brief sketch of Colonel Sibert's distinguished career appeared in our last issue. The other members of the Board were appointed: Mr. Arthur P. Davis, Chief Engineer of the United States Reclamation Service and Professor D. W. Meade of the Wisconsin University and a member of the Ohio Flood Commission. Mr. C. D. Jameson occupies the post of General Adviser to the Board and Mr. L. D. Cornish is the Principal Assistant Engineer to the Board. The gentlemen mentioned and surveyors (including Mr. S. T. Suen a Chinese engineer of the University of Wisconsin) arrived in Shanghai on June 28 and at once set about making arrangements for an immediate start of the survey of the Hwai River district.

The plan of operations is for the party to visit first Hanchwang on the Grand Canal. Three months are to be spent on the survey, the work being carried on by two parties of surveyors, each being apportioned a certain area.

Upon the report that Colonel Sibert makes after the surveys are completed will depend whether the work is started without delay, and its scope. Those who know the awful misery that has been caused in the immense area periodically swept by floods, will hope that this Board, composed of the most distinguished representatives of American Conservancy Engineers, will be able to recommend the carrying out of a scheme that will be of incalculable benefit to China.

* This report was published in the FAR EASTERN REVIEW of November, 1912.

KALGAN-SUIYUAN EXTENSION

Before this issue is out of the press it is likely that the large bridge carrying the railway now in course of construction from Kalgan to Suiyuan over the Yi river at Tatungfu will be completed and open for traffic. The extension is, at present, in operation to the river side, and active traffic is being carried on between that point and Kalgan. With the opening of the bridge trains will cross the river; and the station now in course of construction near Tatung city will be the present terminal. Work is, at present, being carried on to extend the line to Fengchen, 27 miles due north of Tatungfu. The road follows the river valley practically to Fengchen, and the work is mostly side cuts. There will be no tunnelling, and an easy grade will be obtainable.

At the beginning of the next year it is hoped to commence work on another section to the city of Pengtechuan. The work on this section will be somewhat difficult rock cuts, but a fair grade will be maintained.

As soon as money is available the line will be pushed on to Suiyuan, about 120 miles, and thence a further 110 miles southwards to Paotow on the Yellow River. When this line is completed it will open up large extent of territory and secure the trade which comes down the Yellow River from the Langchow region. The Ministry of Communications has given consent to a foreign loan being raised to carry out this work.

OIL STRIKE AT AKITA, JAPAN

On May 25th an important strike of oil was made at Kurokawa Akita-gori, Akita Prefecture, Japan. Work was begun on the new well early last April by the Nippon Oil Company with one of the company's up-to-date rotary boring machines. After drilling through ordinary earth and rock, to a depth of some 1,110 feet, a strata, known to oil experts as "the shell" was encountered. At midnight of May 25, the drill pierced through this shell, or crust, at a depth of 1,368 feet, into what is apparently the lead bed of an extraordinary deposit. It is from this bed that the unusual flow continues. What is most extraordinary, is the fact that the other five wells of the company in the district, which heretofore required suction pumps, also began flowing of their own accord. But the flow was so steady, and being unattended by any extraordinary force, was easily controlled. Even the flow of the new well can be controlled at any time, as it flows in a steady stream. The new well was sunk with an eight inch casing, which has been capped with a four-way head, thereby controlling the flow. The output was at first somewhat difficult to handle, as no provision had been made for such an unusual quantity. The sump at the top of the hill which had been constructed to receive the flow was soon filled and the overflow was conducted down into the upper-level paddy fields, where many hands erected a dyke around the outside of several *cho*, thus forming a very large sump.

HUGE OVERFLOW

This, however, was soon filled and the overflow was again conducted down into valley below, where another large sump was hastily constructed, enclosing several paddy fields. Four or five other sumps were then constructed on this lower level, into which the flow was directed. By means of the four-way cap, the output was reduced from 480,000 to 120,000 gallons per twenty four hour. In the meantime, the other five wells, owing to want of labor to control them, have been checked entirely. From the time of the opening of the well until the four-way cap was in place, the output was about 480,000 gallons per twenty-four hours.

NO PANIC

"Of course," remarked Mr. K. Ito, Superintendent of the Investigation Department of the Nippon Oil Company, to an interviewer "this very fortunate production will, more or less, effect the other companies in Japan but our company does not intend to create any panic in price reductions. Naturally, we intend utilizing the output to our best advantage, but do not intend flooding the marked. Nor do we intend enlarging our refineries, for the present at least. The Imperial Navy as well as the Imperial Railways are in need of oil for fuel, and this discovery fills a long felt want. Therefore, we not only consider it a good fortune to the company, but a very valuable asset to the nation as well. It is the intention of the company to dispose of the greater part of the production in the crude state, refining only that quantity which may be conveniently handled by our refineries at Tsuchizaki.

"We have no idea as to the extent of the lead-bed, but both Mr. Harrison and Mr. Wheat, who came with me from America in March, last year, and were engaged by the company as experts, are of the opinion that the flow is from a bed or lead-sand, and will continue for an unlimited length of time.

UNUSUAL SCENES

"The Company is now employing about 1,000 extra laborers and every effort is being made to secure the output. The paddy fields which are being rapidly transformed into sumps, are not of such a nature as to permit of leakage, and are therefore safe repository-tanks.

"That which struck me as being the most notable feature of the whole was the river of crude oil rushing down through the hillocks to the valley below. The capping of the eight inch casing of the well was also a scene somewhat unusual in the oil industry of this country."

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Before this issue is out of the press it is likely that the large bridge carrying the railway now in course of construction from Kalgan to Suiyuan over the Yi river at Tatungfu will be completed and open for traffic. The extension is, at present, in operation to the river side, and active traffic is being carried on between that point and Kalgan. With the opening of the bridge trains will cross the river; and the station now in course of construction near Tatung city will be the present terminal. Work is, at present, being carried on to extend the line to Fengchen, 27 miles due north of Tatungfu. The road follows the river valley practically to Fengchen, and the work is mostly side cuts. There will be no tunnelling, and an easy grade will be obtainable.

At the beginning of the next year it is hoped to commence work on another section to the city of Pengtechuan. The work on this section will be somewhat difficult rock cuts, but a fair grade will be maintained.

As soon as money is available the line will be pushed on to Suiyuan, about 120 miles, and thence a further 110 miles southwards to Paotow on the Yellow River. When this line is completed it will open up large extent of territory and secure the trade which comes down the Yellow River from the Langchow region. The Ministry of Communications has given consent to a foreign loan being raised to carry out this work.

OIL STRIKE AT AKITA, JAPAN

On May 25th an important strike of oil was made at Kurokawa Akita-gori, Akita Prefecture, Japan. Work was begun on the new well early last April by the Nippon Oil Company with one of the company's up-to-date rotary boring machines. After drilling through ordinary earth and rock, to a depth of some 1,110 feet, a strata, known to oil experts as "the shell" was encountered. At midnight of May 25, the drill pierced through this shell, or crust, at a depth of 1,368 feet, into what is apparently the lead bed of an extraordinary deposit. It is from this bed that the unusual flow continues. What is most extraordinary, is the fact that the other five wells of the company in the district, which heretofore required suction pumps, also began flowing of their own accord. But the flow was so steady, and being unattended by any extraordinary force, was easily controlled. Even the flow of the new well can be controlled at any time, as it flows in a steady stream. The new well was sunk with an eight inch casing, which has been capped with a four-way head, thereby controlling the flow. The output was at first somewhat difficult to handle, as no provision had been made for such an unusual quantity. The sump at the top of the hill which had been constructed to receive the flow was soon filled and the overflow was conducted down into the upper-level paddy fields, where many hands erected a dyke around the outside of several *cho*, thus forming a very large sump.

HUGE OVERFLOW

This, however, was soon filled and the overflow was again conducted down into valley below, where another large sump was hastily constructed, enclosing several paddy fields. Four or five other sumps were then constructed on this lower level, into which the flow was directed. By means of the four-way cap, the output was reduced from 480,000 to 120,000 gallons per twenty four hour. In the meantime, the other five wells, owing to want of labor to control them, have been checked entirely. From the time of the opening of the well until the four-way cap was in place, the output was about 480,000 gallons per twenty-four hours.

NO PANIC

"Of course," remarked Mr. K. Ito, Superintendent of the Investigation Department of the Nippon Oil Company, to an interviewer "this very fortunate production will, more or less, effect the other companies in Japan but our company does not intend to create any panic in price reductions. Naturally, we intend utilizing the output to our best advantage, but do not intend flooding the marked. Nor do we intend enlarging our refineries, for the present at least. The Imperial Navy as well as the Imperial Railways are in need of oil for fuel, and this discovery fills a long felt want. Therefore, we not only consider it a good fortune to the company, but a very valuable asset to the nation as well. It is the intention of the company to dispose of the greater part of the production in the crude state, refining only that quantity which may be conveniently handled by our refineries at Tsuchizaki.

"We have no idea as to the extent of the lead-bed, but both Mr. Harrison and Mr. Wheat, who came with me from America in March, last year, and were engaged by the company as experts, are of the opinion that the flow is from a bed or lead-sand, and will continue for an unlimited length of time.

UNUSUAL SCENES

"The Company is now employing about 1,000 extra laborers and every effort is being made to secure the output. The paddy fields which are being rapidly transformed into sumps, are not of such a nature as to permit of leakage, and are therefore safe repository-tanks.

"That which struck me as being the most notable feature of the whole was the river of crude oil rushing down through the hillocks to the valley below. The capping of the eight inch casing of the well was also a scene somewhat unusual in the oil industry of this country."

THE FAR EASTERN REVIEW

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THE NEW MINISTER OF COMMUNICATIONS

When Hercules made up his mind to cleanse the Augean stables he was confronted with a task scarcely more difficult than that which has to be tackled by any one inspired with a desire to reorganise the railway affairs of China, and Hercules had the distinct advantage of being able to bend to his purpose the waters of the Alphaeus and Peneus. No such potent streams lie near the hand of the worker in Peking. Nor has he but the stalls of 3000 unresisting oxen to deal with. He has to dislodge a system which has grown in vigor with the years and which has struck its roots deep into the fertile soil of nepotism, a system which will be defended by passive resistance if by no forceful means by thousands who have lived to believe that the Ministry and all its avenues of wealth production are primarily for the good of the individuals fortunate enough to have secured a hold upon it, and only secondarily for the benefit of the State. That this condition is one of extreme gravity and of growing danger in view of the rapid expansion of the railway system is realised fully by President Yuan Shih-kai, and he is determined to effect a reorganisation before it is too late.

The changes recently brought about in the administrative systems of the provinces and the Capital—and which are dealt with elsewhere in this issue—enable the President to pay direct attention to the organs through which that administration is conducted, and while plans have been made to reorganise all the Ministries the one upon which particular interest is centred is that of Communications. In general the control of the Ministries will be changed from the present system to that which existed during the old regime. That is to say in each Board there will be a President, two Vice-Presidents, several councillors, heads of various departments, and the usual staff of secretaries. Until recently there was one Minister, one vice-Minister and, in the Board of Communications, two Directors-General, one in charge of telegraphs and one in charge of railways—the last functionary being the most powerful by virtue of his control of all the strings in the institution with which he was connected. There were also councillors, and, of course, the working staff. It is felt by the President that the old style has many advantages. Its revival will, particularly, enable him to make some sweeping changes which he would find it difficult to effect if he retained the present system, and above all it will give him the opportunity to break down a centralisation of power in an individual two or three grades lower than the Minister and replace it in the hands of the highest Official in the Board, to wit the Minister himself.

More public attention is directed to the reorganisation of the Ministry of Communications, of course, because it is the principal earning department in the control of the Government. The native press who are antagonistic to one section in the Board have exhibited an almost frantic delight in chronicling the changes that have been rung already or which are contemplated, and some newspapers have entered upon a veritable campaign of denunciation of the people whom they claim to be the leaders of the Chaotung or "railway party," Nor are they stinting in their praise of Mr. Liang Tun-yen, the official upon whom the onerous task of reorganising the Ministry has fallen.

Mr. Liang, at the urgent request of the President, came out of a retirement which has lasted from before the Revolution—when he was compelled by bad health to relinquish the Presidency of the Board of Foreign Affairs and the post of Controller-General of Revenue—to undertake the task of reorganisation which President Yuan Shih-kai desires to see carried out. He has accepted a difficult and onerous position which imposes upon him tremendous labor and the necessity of constant application in the unravelling of the numerous perplexities which are said to exist for the uninitiated in the methods which have existed in managing the railway affairs of the country. But he enters upon his work filled with optimism, and staunch in the belief that honesty of purpose will pull him through. Honesty and Integrity constitute his watchword, and his aim will be so to arrange matters that China will reap the fullest advantage from her railways.

NEW RAILWAYS FOR SHANTUNG.

On December 31, 1914, a preliminary agreement was signed between China and Germany for the construction of two new railways in Shantung province, one from Kaomi, west of Tsingtao, to Ichowfu and Hanchuang, on the railway line connecting Pukow with Tientsin, and the other from Tsinanfu to some point on the Peking-Hankow railway. In the final agreement the line from Kaomi was to run to Hsuchowful and to form a junction with the Tientsin-Pukow Railway.

Under the Kiaochow Convention of March 6, 1898, China conceded Germany the right to build railways in Shantung under German Company laws, and while the railway from the port of Tsingtao to Tsinanfu was so constructed, Germany decided not to follow the same practice in the future, agreeing to forego the privileges in that direction and permitting China to build the lines upon conditions similar to those under which other railways have been constructed.

When the preliminary agreement was signed in December last this change was given effect to, and during recent months negotiations have been proceeding with regard to a final agreement to have work carried out on the railways mentioned.

The final agreement, which was signed on June 24, stipulates that China shall raise a loan in Germany for the necessary money. The loan agreement has not yet been signed, but it is understood that it will grant a commission of five per cent. on all the materials purchased, or a higher sum if such be granted to others. This condition for a purchasing commission follows the precedent set elsewhere in China.

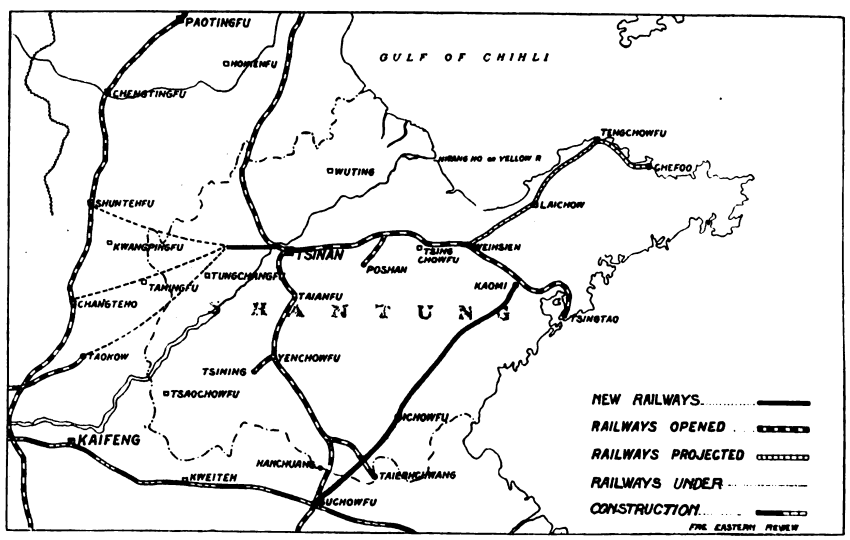
The Chief, and other engineers, will be Germans, and the Accountant staff will likewise be under the control of German experts.

When the lines are completed they will be handed over to the Ministry of Communications for operation, the control, of course, being in the hands of Germans until the loan is repaid.

The line to be built from a point on the railway west of Tsinanfu has not yet been settled as to route, and that will not be decided until after a survey has been made of the country between the Yellow River and Changteho, and Taokow, the present terminus of the Peking Syndicate railway. The final selection will of course bring about a connection between the Peking-Hankow railway and the line running to the port of Tsingtao. The idea of connecting Tsinanfu and Shuntehfu, has been abandoned.

There is a provision in the agreement that material shall be purchased from Germany.

Another provision, and an important one, is that if in the future, any railway is to be built westward of the Peking-Hankow line from the point where the German line will connect with it, Germany shall have the preference of supplying the capital.



The dotted lines from a point west of Tsinan show the three originally proposed routes to connect with the Peking-Hankow Railway. That to Shuntefu has now been definitely abandoned.

EASTERN EXTENSION TELEGRAPH CO.

The eightieth ordinary general meeting of the Eastern Extension, Australasia and China Telegraph Company, Limited, was held on May 12, in London, Sir John Wolfe Barry, K.C.B., presiding.

In the course of his address, the Chairman said: The gross receipts for the past year amounted, in round numbers, to £738,000, against £747,000 for 1912, showing a decrease of £9,000. This result may be considered not unsatisfactory, seeing that all our local tariffs in the Far East and many of our through tariffs, were extensively and very substantially reduced during the last six months of the year under review, by which a loss was estimated to take place in the event of the traffics not immediately responding to the tariff reductions.

The full effect of the lowering of the tariffs will be felt in the current year, and it is to be hoped that the considerable reductions which have been made will in the future result in a correspondingly larger volume of traffic. Fortunately, some of the traffics which were not included in the tariff reductions showed a substantial increase during the past year, which in a large measure counteracted the effect produced by the tariff reductions to which I have made reference. Turning to the expenditure, the working and other expenses amounted, in round numbers, to £355,000, against £321,000 in 1912, showing an increase of £34,000.

Nearly one-half of this increase was caused by our cable repairs being more numerous and costly than in the previous year, and most of the remainder is due to the employment of additional staff to meet traffic requirements, automatic and other staff promotions, and to our having to provide half the cost of the new station opened by the Eastern and Eastern Extension companies at Colombo in connexion with our new alternative route to the Ear East.

Unfortunately, the cost of living in the Far East and elsewhere has, as you are doubtless aware, greatly risen in recent years, and we have found it necessary since the close of the year to further revise and improve some of our staff scales of salaries and allowances. The net profit for the past year was roundly £343,000, and after adding £27,000 brought forward from the previous year there remained an available balance of over £370,000.

The usual three-quarterly interim dividends of 2s. 6d. per share have already been paid for the past year, and it is now proposed to distribute a like amount, making a total dividend of 5 per cent. for 1913. It is also proposed to pay a bonus of 4s. per share, or 2 per cent., making a total distribution to the shareholders of 7 per cent. for the past year, and to carry forward £30,616, against £27,535 in 1912.

After making the usual additions to the maintenance, ships' insurance and depreciation funds, £130,000 of the revenue balance has been transferred to the general reserve fund, together with the value of the picked-up Tasmanian cable and stores, amounting to £17,000. On the other hand, the general reserve fund has been debited during the year with £466,000 in part payment of the cost of the new Colombo-Hongkong cables, together with £65,000 for partial cable renewals, and £77,000, representing the loss incurred on the sale of investments during the year. In other words, the general reserve fund has been credited with £147,000 and debited with £608,000, leaving the fund at the end of the year with a balance of £730,000.

Since the close of the year further investments have been realized to provide for the balance of payment for the new cables, and the loss thereby incurred will be deducted from the provision, shown in the balance-sheet, of £200,000 for investment fluctuations. At the end of the current year this account will be properly adjusted. As stated in the report, the new cables between Colombo, Penang, Singapore, and Hongkong have been successfully laid and opened for traffic, and, with the additional cables laid by the Eastern Company between Suez, Aden, and Colombo, a new alternative route to the Far East has been established via Colombo, which should materially assist us in efficiently dealing with increased business.

He went on to say that the revised arrangement for week-end letter telegrams exchanged with Australasia was brought into force on May 1, by which those telegrams were now transmitted *throughout* by telegraph, if it be necessary, in order to secure delivery on Tuesday morning, and the minimum charge, based on the principle of a quarter of the ordinary rate, was reduced from 18s. for 24 words to 15s. for 20 words, with 0d. for every additional word. From the same date that week-end telegram system was extended to the Straits Settlements and other parts of their service.

RAILWAY AROUND PEKING

CONNECTING UP IMPORTANT TERMINALS

The Ministry of Communications have at last come to an arrangement with the Peking City authorities whereby they will be able to connect the terminals of the Peking-Kalgan, the Peking-Mukden, the Peking-Tungchow, and the Peking-Hankow railways. Later a Central Railway station will be built at which it will be possible for passengers to take trains over any lines open for traffic from the Capital.

Similar conditions exists with regard to the Peking-Kalgan railway, though the route is much more round-about than is the case with the other lines.

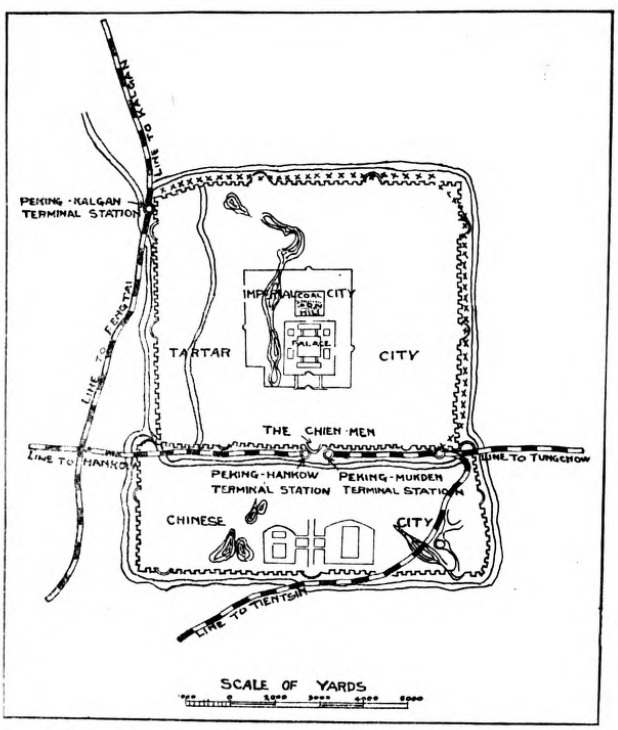
To overcome this difficulty, and to give passengers greater facilities, doing away entirely with the long and tedious ride across the city to reach the Kalgan railway, it is now arranged to have a line built round the north and east sides of the city which will connect the Kalgan railway direct

THE CHIENMEN GATE, PEKING.

This unique photograph, taken from the top of the wireless telegraph mast on the wall behind the American Legation, clearly shows the system of construction of the gateways in the Tartar Wall of Peking. The clock-tower in the foreground of the picture is part of the terminal station of the Peking-Mukden Railway, while the arrow points to the terminus of the Peking-Hankow Railway. It is now proposed to remove the intervening walls forming the curtain of the Chienmen Gate, leaving the two gate towers standing. The tower on the right of the picture, is of course, on the top of the main Tartar wall and is the main tower of the Chien-men.

The need for a connecting link between these railways has been felt for a considerable period, and with the effluxion of time and the development of traffic the disabilities connected with the transportation of cargo from one line to the other have become intensified.

Although the terminals of the Peking-Mukden and the Peking-Hankow railways are but a stone's throw from one another, being situated to the east and west of the curtain, or demi-lune, of the famous Chien-men Gate, cars can only be transferred from one line to the other by utilising a connecting link situated some miles from the Capital on either side.

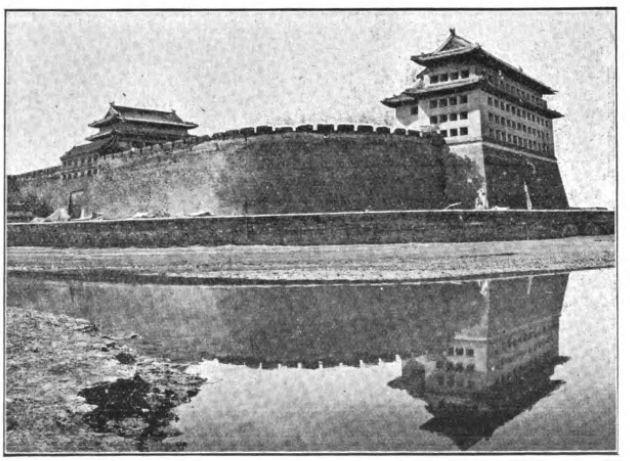


The line of crosses shows the route of the connecting railway.

with the Peking-Mukden and the Tungchow railways, permitting passengers embarking from the Legation Quarter to take the train for either place at what is known as the Water Gate Station, while three new stations will be built on the east and north of the Tartar Wall to accommodate people living in those sections of the city.

What is now the Hsichimen station of the Kalgan railway will be extended along portion of the north-west wall, and the railway will be taken straight along the outside of the wall to the north-east corner where the north and the east walls will be pierced to permit of a serviceable curve being constructed. The line will then run down the east wall and pierce the south-eastern corner to permit of another curve to join with the existing line terminating at the Water Gate Station.

The line will be about seven miles in length and will hug the wall the whole way, being built upon the high land between the moat and the wall. This will necessitate a change in all the gates on the north and east, a matter which gives the city authorities some concern, for they are loath



THE ANTING-MEN GATE, PEKING.

As in the case of the Chien-men the stone curtain shown in this picture will be removed, leaving the tower on the right of the picture, and the one on the left—which is on the main wall—standing.

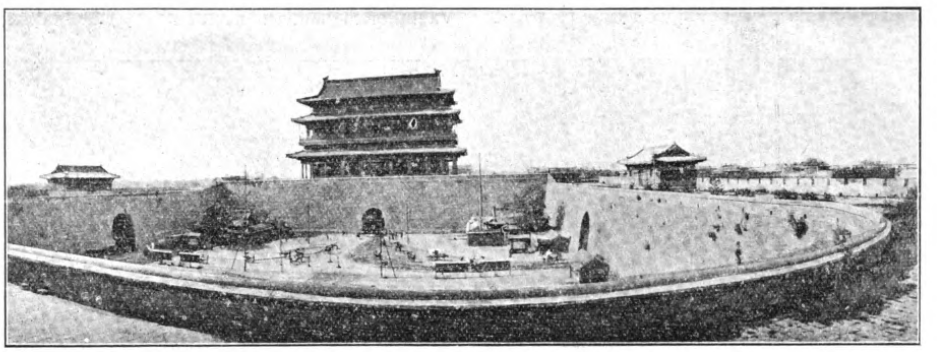
to allow the architectural grandeur of the wall to be interfered with. They recognise the arguments of the utilitarians, however; and since no better route than what the land beneath the walls provides can be secured

they are willing that the gates shall be altered in order to permit the railway men to have their way.

The engineers find it necessary practically to erase the great curtains which curve on the outside of the north gates, while on the eastern side they will be able to tunnel through the curtains of the two gates and to a greater or less extent preserve their ancient state. On the north the outer gates and towers will be preserved, the city authorities demanding that steps shall be provided so that they may be reached by pedestrians who may desire to climb them.

Between the Tehsheng-men (or Gate of Victory) and the Anting-men (or Peaceful Gate) a new station will be built, while a second one will be constructed between the Anting-men and the eastern corner of the wall. A third will be situated between the Tungchih-men (or Direct East Gate) through which the road to Jehol runs, and the Chaoyang-men (or Gate of the Rising Sun) through which runs the road to Tungchow. These stations will assist to develop the eastern and northern sections of the city, and will give easy access to the railway to travellers to Kalgan who might live in these localities.

At the south - eastern corner of the city, and connected with the Peking-Mukden railway, is a short line which gives access to the old granaries. Over this spur the tribute rice used to be carried from the main lines to the stores, but as tribute rice has ceased to come to the Capital that spur will no doubt be done away with now that improvements are being undertaken.



ANOTHER VIEW OF THE CHIEN-MEN, PEKING.

This view of the Chien-men is taken from the small gate tower, and shows the passenge way through the main Tartar Wall, and the main pavilion, as well as the curtain which is to be removed.

The most important alteration which will be effected in connection with the gateways of Peking, and the one which will be regarded with most regret by those whose artistic susceptibilties are always ravaged by the advance of utilitarian projects, will be at the famous Chien-men (or Meridian or Noonday Gate). Here it is intended to pull down the imposing curtain and so create a wide avenue between the Peking-Hankow and the Peking-Mukden railway stations. That the massive grandeur of the chief entrance to Peking will be affected is certain though the fact that the tower surmounting the south gate of the curtain will be preserved, with suitable flights of steps on either side so that it might be reached by visitors, will probably enhance rather than diminish the general aspect. At all events the removal of the wall will certainly be of tremendous advantage in the handling of traffic which is daily becoming a more and more difficult problem.

After the curtain is removed a fine esplanade will exist, and later the Peking-Hankow and Peking-Mukden railways will be connected, by a loop to the south of the outer gate. A central railway station will be erected, somewhere in the vicinity in the future. A site for this important centre has not yet been selected.

To facilitate the handling of traffic in and out of the city two tunnels will be bored through the wall on either side of the existing arch forming the Chien-men. One will be utilised for the proprosed tramways, while the other will be used for passenger traffic. These are absolutely necessary improvements, and will be appreciated by all whose lot it is to have to traverse this section of the city.

The cost of making the Chien-men alterations will be borne by the Peking-Mukden and the Peking-Hankow railways between them, it being deemed that they are the ones who will benefit by the change. The city authorities bear none of the cost of the projected improvements in any part of the city, but they demand that the artistic features of the gateways which will be affected shall not be destroyed or rendered unsightly. The cost of building the line round the north and east walls will be defrayed by the Peking-Kalgan railway, with assistance if necessary from the Peking-Mukden railway funds.

It is expected that work will be commenced on the alterations of the Chien-men almost at once, the contract having been signed, and as soon as the city authorities have approved the plans the railway will be commenced. It is expected that within two months of the beginning of work trains will be in operation.

NEW BANK BUILDINGS IN CHINA

The development of foreign banking interests in China is necessitating the erection of adequate foreign buildings adapted to banking purposes in the Capital for those institutions which have not yet accommodated themselves in this respect, and improved premises elsewhere.

At the present time both the Chartered Bank of India, China and Australia, and the Banque de l'Indo-Chine are carrying on active operations in the erection of suitable modern premises at Peking, and it is reported that the Banque Industrielle de Chine and certain Chinese banks are arranging for the erection of buildings on the ground at present occupied by the Ministry of Finance, near the Legation Quarter.

The Hongkong and Shanghai Banking Corporation, the Russo-Asiatic Bank, and the Yokohama Specie Bank have been in their own premises for some years, but others doing business in Peking have been forced to do the best they could with any houses available. Business is growing so fast that make-shift premises can no longer be tolerated, and we would not be surprised to see the International Bank, the Bank Sino-Belge, and others, soon following the steps being taken by the Chartered and French Banks.

The Banque de l'Indo-Chine is erecting its new premises on the site which it has always occupied, in Legation Street, opposite the Russian Legation, while the Chartered Bank of India, China, and Australia has purchased a site at the corner of Legation Street, opposite the entrance of the American Legation.

The Chartered Bank

The lot purchased by the Bank is a narrow one with a frontage on Legation Street of 37 feet and on the Rue Linevitch of 165 feet. The building has been designed to consist of a basement, ground, first, second and attic floors. The exterior will be faced with granite and red pressed brick work, and the first floor will be provided with balconies.

The Basement will comprise a spacious reinforced concrete treasury and sub-treasury, a large fire-proof record room, and several store and clerks rooms, besides the heating chamber.

The Ground Floor will be entirely for banking business, the main entrance to the Banking Hall being at the corner of Legation Street. To the left of the Banking Hall will be a commodious office for the Agent. In the centre of the building will be the Chief Assistant's office, so placed as to give an unbroken view of both the Banking Hall and shroff's office; the latter with the compradore's office taking up the rest of the space on this floor, but having a separate entrance from the north-east corner.

Another entrance on Rue Linevitch will give access to the main stairs of the Agent's residence and junior staff quarters on the first and second floors respectively. The stairs are to be constructed of reinforced concrete throughout.

The servants and kitchens are provided for in the attic floor; and the building will be equipped with complete heating and sanitary plants.

The architects are Messrs. A. J. M. Shaw and C. Thunder.

FAR EASTERN RAILWAYS

CHINA

Kowloon-Canton Railway.—A Hongkong paper of May 19 reports:—The growth of traffic on the British section of the Kowloon-Canton Railway has necessitated the addition to the rolling stock of a new modern-type British-made locomotive, which arrived from Home last week. The new engine is intended for use on the main line, and is being erected at the Railway Works at Hunghom under the superintendence of the Loco. Superintendent, Mr. C. D. Lambert, it having arrived here in sections. Messrs. Kitson and Co., of Airedale Foundry, Leeds, are the makers of the locomotive, which is of the 2-6-4 side-tank type. It is fitted with leading radial truck, six driving wheels coupled, and a trailing four wheeled bogey. The length over all is 43 feet 10½ inches; and its weight in working order is 90.7 tons. The driving wheels are 5 feet 1½ inches diameter and the radial and bogey wheels 3 feet 7 inches. The cylinders are 19 inches in diameter by 26 inch stroke, and are fitted with Walschaert's valve gear. The heating surface is 1,810 square feet and the tractive force 20,603 lbs., at 75 per cent. of the boiler pressure. The locomotive carries 1,900 gallons of water and 3½ tons of coal. In the matter of gear, one or two experiments are to be tried with this locomotive. It is being fitted with Wakefield mechanical lubricators, which pump oil under pressure to all the bearings and cylinders in the engine, thus doing away with dozens of small oil-boxes. By this arrangement the supply of oil is self-regulated, according to the speed at which the engine is travelling. Another innovation will be the fitting to the front of the locomotive of one of the Pyle National Electric Headlights, of some 25,000 candle power. This light will illumine the track for half a mile ahead, and will be worked by a small turbine and dynamo coupled up to the engine, the light regulating itself. It is expected that this will be of the utmost use on the night trains in typhoon weather, as it will show up, far ahead, any obstructions which may happen to be on the line. The locomotive, which is expected to carry out her steam trials in about three weeks' time, cost about £4,700.

Shanghai-Nanking Railway—The following figures of traffic returns (approximately) for the week ended May 23 are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	48,854	11,828	60,682
1913....	45,195	9,615	54,810
Increase.	3,659	2,213	5,872
Decrease	—	—	—

For forty-seven weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914 ...	2,276,235	482,580	2,758,815
1913....	2,043,987	443,876	2,487,863
Increase.	232,248	38,704	270,952
Decrease	—	—	—

Week ended May 30.

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	54,332	13,196	67,528
1913....	42,037	10,306	52,343
Increase.	12,295	2,890	15,185
Decrease	—	—	—

For forty-eight weeks.

Year.	Passengers.	Goods & Sundries.	Total.
	$	$	$
1914....	2,330,567	495,776	2,826,343
1913....	2,086,024	454,182	2,540,206
Increase	244,543	41,594	286,137
Decrease	—	—	—

Week ended June 6.

Year.	Passengers.	Goods & Sundries	Total for the week.
	$	$	$
1914	58,124	16,703	74,827
1913	45,387	10,577	55,964
Increase.	12,737	6,126	18,863
Decrease	—	—	—

For forty-nine weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	2,388,691	512,479	2,901,170
1913....	2,131,411	464,459	2,596,170
Increase.	257,280	47,720	305,000
Decrease	—	—	—

Week ended June 13.

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	48,853	18,000	67,753
1913....	48,067	17,001	65,068
Increase.	786	1,290	2,685
Decrease	—	—	—

For fifty weeks.

Year.	Passengers.	Goods & Sundries.	Total.
	$	$	$
1914....	2,437,544	531,379	2,968,923
1913....	2,179,478	481,760	2,661,238
Increase.	258,066	49,619	307,685
Decrease	—	—	—

Week ended June 20.

Year.	Passengers.	Goods & Sundries	Total for the week.
	$	$	$
1914	42,770	11,107	53,877
1913	42,854	19,209	62,063
Increase.	—	—	—
Decrease	0,084	8,102	8,186

For fifty-one weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	2,480,314	542,426	3,022,800
1913....	2,222,332	500,069	2,723,301
Increase.	257,082	41,517	299,499
Decrease	—	—	—

MANCHURIA

Penchihu-Niuhsintai Light Line.—The light line starting on the left bank of the Taitzu at the railway bridge near Penchihu, and running for a little over 9 miles to Niuhsintai, where a colliery is located, used to be operated three times both ways daily. As the sidings to Hungchienkou, Wangchiakou, and Hsiaonankou, each about 1½ miles long were completed, the times of running trains, have been increased to eight daily since June 1, making it possible to transport 300 tons of coal a day to Penchihu Railway Station. There are said to be about 80,000 tons of coal in stock at the collieries, and by the new arrangement these heaps of stock will be gradually carried away. A mixed train carrying passengers is being operated twice each way daily, the intermediate stations being Tsuichia, and Wolung. The fare is 7 sen each section, it costing 21 sen a trip between Penchihu and Niuhsintai. The fare on the three sidings is 5 sen for each. The freight rates are 6 sen per ton per mile at the carload rate, 8 sen in ordinary cases, and 6/10-8/10 sen per 100 *kin*.

New Station at Changchun.—The new South Manchuria Railway Station at Changchun was formally opened on June 4.

The main building has the floor area of 632 *tsubo*, and is designed on the Renaissance plan. It is a two-storeyed brick structure, steel-girdered and tile-and asphalt-floored. A flat brick annex stands between the main building and the passenger-car shed. It contains a lavatory, an office for railway guard, a store-room, etc.

Work was begun in March last year. It cost about Y. 200,000.

South Manchuria Railway Company.—The *Manchuria Daily News* understands that the Directorate of the S. M. R. Co. has fixed upon its policy *re* the Company's enterprises for the present fiscal year within the bounds of the Company's estimates which the Tokyo Government approved of with the concurrence of the Imperial Diet. It is gleaned that all fresh undertakings which are held as comparatively less urgent have been decided to be postponed to the succeeding years, although a positive policy will be adhered to in all business enterprises. Some substantial changes are said to have been made in the estimates, including the postponement of the reconstruction of the Dairen Railway Station.

The Y500,000 yen loan borrowed by the Chinese authorities at Mukden from the S. M. R. Co. last year fell due at the end of May, but the extension of the term by another year has been agreed upon.

The exact amount of the S. M. R. traffic earnings during the last fiscal year was Y22,275,132, being an increase by Y2,367,676 on the preceding fiscal year. The passenger receipts totalled Y5,069,127 and the freight receipts Y16,159,171.

JAPAN

Yokohama Station.—When the new Railway Station at Yokohama is completed in March next year, it will be an attractive feature in the bay city, says a Tokyo paper. The station is entirely a stone and brick structure, modelled in the Renaissance style, and is two stories high. The new station faces the town of Yokohama in front, with the Tokyo-Yokohama electric railway line of the Imperial Railway Board on its right, and with the main track of the Tokaido line in the rear. On the ground floor are ticket office, parcels office, and the offices of the station master and the office force. Passengers will get their tickets on the ground floor, and go upstairs, where the waiting rooms for the First, Second and Third Class, and for women, and a dining hall are provided. From these waiting rooms, passengers can descend, across bridges, direct to the train or to the electric railway track. Lavatories and dressing rooms are also provided upstairs, and in its equipment and general arrangements, the new building will surpass the present one.

profits of the Company for the twelve months under review, after paying all charges, including the salary of the General Managers, and providing for all bad and doubtful debts, allowing for loss on subsidiary coins, the payment of auditors' fees $500, and including $975.00 unclaimed dividends forfeited, amount to... $100,920.59

To which has to be added the balance brought forward from the previous year..... 240.11

$101,160.70

From this there has to be deducted:—

General Managers' Commission of 5 per cent. on the net profits for the year.....	$5,046.02	
Remuneration of the Consulting Committee	2,000.00	
		7,046.02
Leaving available for appropriation		$94,114.68
We propose to pay a dividend of 7 per cent., which will absorb.....	$63,000.00	
Write off Building Improvements, Furniture, Fittings, Utensils of Trade.....	11,000.00	
Write off Aerated Water and other Plant and Machinery	13,000.00	
Write off Steam Launch, Steam Lighter, Water Boats and Motor Lorry	6,000.00	
	$30,000.00	
And carry forward to 1914 account.....	1,114.68	
		$94,114.68

PERSONAL

Mr. Rigby, District Engineer of the Peking-Mukden Railway at Fengtai, has been promoted to be assistant Engineer-in-chief *vice* Mr. Cox, now Engineer-in-chief of the Canton-Hankow line. Mr. Farrant, district Engineer at Yinkow, has been transferred to Fengtai.

The Commissioner of Customs at Canton, Mr. Maze, and the Commissioner of Kowloon Customs, Mr. Lowder have been given the Third Class Chia-ho Decorations. The former Acting Commissioner of Samshui Customs, Herr von Rautenfield, has received the Fourth Class Chia-ho Decoration. The Deputy Commissioners of Canton Customs, Mr. Guernier, has received the Fifth Class Chia-ho Decoration, and the Assistants of the Canton Customs, Messrs. Sharples and Schregardus, the Sixth Class Chia-ho Decorations.

Mr. Hoare, the successor to Sir Somerville Head as third secretary at the British Legation, at Peking has taken up his duties.

Mr. A. H. Collinson, lately Engineer-in chief of the Canton-Hankow Railway, has gone to the north of Japan, to examine into timber production with special reference to the prospects of railway sleepers. Upon the completion of his investigations in the Hokkaido, Mr. Collinson is going to London to join a prominent firm of consulting engineers, who have interests in China.

Mr. W. Brattzow, Russian Vice-Consul at Shanghai, has been promoted to the rank of Consul and transferred to Kirin. His successor will be Mr. A Voznecienski, for some tim Vice-Consul at Hankow.

Mr. William Henry Stone, Adviser to the Department of Communications in Tokyo, has been decorated by the Emperor of Japan with the First-class Order of Merit in appreciation of services rendered in developing the means of communication, and especially in the acquisition of the privilege of laying a cable between Japan and Shanghai.

Mr. Alfred Sze (Shih Shao-chi) has been appointed Chinese Minister to Great Britain.

Mr. C. R. Burkill has accepted an invitation to serve on the Electricity Committee of the Shanghai Municipal Council.

Dr. T. J. N. Gatrell has received an appointment as Foreign Secretary to the Chinese Salt Administration, carrying with it a salary of about $1,000 per month. Dr. Gatrell is at present absent on furlough.

Dr. Morrison, Political Adviser to President Yuan Shih-kai, left Peking on leave of absence on June 10. He will visit England and Canada. Before leaving the President bestowed upon him the First Class Chiaho decoration.

Mr. Frank Grove, M.I.C.E., Engineer-in-Chief of the Chinese section of the Canton-Kowloon Railway, has been appointed Engineer-in-Chief of the projected Nanking-Changsha Line. He will be succeeded at Canton by Mr. Foord, former Engineer in Chief of the Shanghai-Hangchow Railway.

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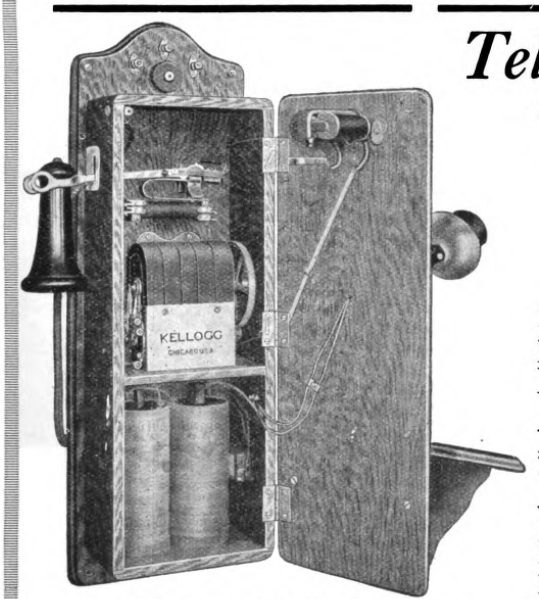

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THE FAR EASTERN REVIEW

COMMERCE :-: ENGINEERING :-: FINANCE

VOL. XI. SHANGHAI AND MANILA, JULY, 1914 No. 2

THE PROPOSED RAILWAY FROM NANKING TO PINGSIANG

REPORT OF SURVEYOR'S RECONNAISSANCE

Mr. H. T. Foord, accompanied by Mr. S. B. Shen, and several student surveyors, recently completed a reconnaissance survey for a railway from Nanking to Pingsiang through Nanchang, the capital of Kiangsi Province.

The total length of the railway is estimated at 643 miles including the branch line from Loping to Kingtehchen and the estimated cost of construction and equipment is £7,608,925, or £11,833 per mile.

In setting about the survey of this line Mr. Foord kept very prominently in mind the probable future development of railway activity in the territory embraced by Chekiang, Anhui, Kiangsi and immediate provinces, and, in the excellent map which he drew for the information of the Ministry of Communications, he elaborated with considerable foresight what, in future, are likely to develop into trunk railways. Mr. Foord, as an engineer, felt it to be essential that the question of future trunk lines should be taken closely into consideration when discussing the construction of the line from Nanking to Pingsiang, providing that those parts of it which will form sections of the eventual trunk lines should be built with easy gradients and curves, and saving money by constructing in a cheaper way those parts which may for the sake of diction be termed light railways.

On his map, Mr. Foord indicates that the railway lines now running from Nanking to Shanghai and from Shanghai to Hangchow should be continued as a trunk line southwestwards to Yenchowfu and on through to Chuchowfu, across the provincial boundary of Chekiang into Kiangsi province and to Kwanghsinfu along the valley of the Kin-kiang river where it should connect with the proposed line from Nanking to Nanchang, about 50 miles to the east of Nanchang. The trunk line should then proceed from Nanchang to Juichowfu and direct westwards to Changsha. Two other trunk lines are also shown converging on Nanchang from the south, one from Foochow, another from Canton; while the line now in course of construction from Nanchang to Kiukiang would ultimately find continuation to the north of the Yangtsze between and ultimately joining the Peking-Hankow and the Tientsin-Pukow lines.

Whether these railways will be built in the lifetime of the present generation cannot be said, but efficiency in Chinese railway schemes is only to be secured by such foresight as Mr. Foord displays. In view of the possibilities of trunk line extension, Mr. Foord is of the opinion that it would be wise to make the Nanking-Changsha line a light railway to within, say, 50 miles of Nanchang. From Nanchang to Changsha two routes are possible, one direct to Changsha, the other striking south to Fengcheng and Changshu, then following the Siukiang valley almost as far as Pingsiang, where it would join up with a line already in operation between Pingsiang and Chuchow, junctioning there with the trunk line from Wuchang to Canton. If the latter route is taken Mr. Foord is of opinion that the first 60 miles from Nanchang should be built as portion of a trunk railway which is destined, ultimately, to connect with Canton, and then from a few miles south of Chuchow extend to Pingsiang as a light railway.

The Ministry of Communications would act wisely in giving close consideration to the map of South Central China which Mr. Foord has prepared. Mr. Foord deserves congratulation for emphasising the relations existing between present day and future construction of railways in the country.

After examining the route which he was engaged in reconnoitring, Mr. Foord came to the conclusion that it would be well to utilize the present short railway existing in Nanking, and known as the Nanking City Railway, as the starting point for the line from Nanking to Nanchang. Though that line is not at present in good order and has no junction with the Shanghai-Nanking Railway, the latter could be effected at very little expense while the former would be worth the money which may be necessary to place it in a state fit to carry heavy and through traffic.

Mr. Foord reports that the line divides itself naturally into three sections, the first of which from Nanking to Hweichowfu, a distance of about 205 miles, is for the most part through fairly easy country, with the exception of one divide shortly before reaching the latter town.

Up to Ningkwofu the route passes through rolling country or flat plain, the most important towns on the way being Molingkwan, Chaochienyu, Kaoshun and Singhuchong.

This part is thickly populated, and, although there is no important staple product with the exception of rice, there is a prospect of a fairly remunerative traffic. The rice trade centres mainly round Kaoshun, but the rice, which is of the second quality, is mostly taken by boats to Wusieh and Soochow, on the Shanghai-Nanking Railway.

Ningkwofu is a large and wealthy town, and a considerable passenger and goods traffic will certainly spring up between it and Nanking, as it will be only about four hours distant by railway. There is, however, competition by water, as a steam launch runs during the summer months to Wuhu, and there is also the Wuhu Railway to be considered, the distance from Ningkwofu to Wuhu being less than half the distance to Nanking. This line upon which construction was commenced some years ago is at present in abeyance, but it is certain, sooner or later, to be built.

An outcrop of coal exists to the east of Ningkwofu, but it appears to be of a poor quality, hard, and with very little flame, though it cannot be judged definitely from samples taken from the outcrop only.

There is an excellent site for a station just outside the east gate of the city, level ground which would not be required to be raised much and close to the business quarter and the river.

Beyond Ningkwofu there are two roads to Hweichowfu, following two nearly parallel valleys, about 40 miles apart, at their greatest divergence. The Western route is most used and more business passes that way.

The neighbourhood of this road itself is impracticable for the railway, which would have to follow the valley further to the right. The route through Ningkwohsien is easier and holds out just as good prospects of traffic.

All this country is full of ruins indicating its former prosperity, but it is said to have never recovered from the Taiping Rebellion, when it was practically depopulated.

The line is easy up to the watershed which separates the rivers flowing into the Yangtse from those which flow through Chekiang. This point is reached about 23 miles South of Hweichowfu, and the valleys leading up to it on both sides are very narrow and tortuous.

The ridge could be crossed without a tunnel, or with a very short one, if a gradient of 1 in 50 were employed, but the engineer feels that such would be bad policy on this section of the line. He is of opinion that the maximum gradient should not be steeper than 1 in 100, in which case a tunnel about three quarters of a mile long would be required, but it is almost sure that this could be materially reduced by a very careful survey before fixing the actual location of the line.

The distance from Shanghai by rail, via Nanking, would be roughly 400 miles, and via Changchow would be not more than half the distance, besides which the line, being without any severe gradient or heavy works, would be much cheaper to run, and, consequently, freights could be fixed at a much lower figure.

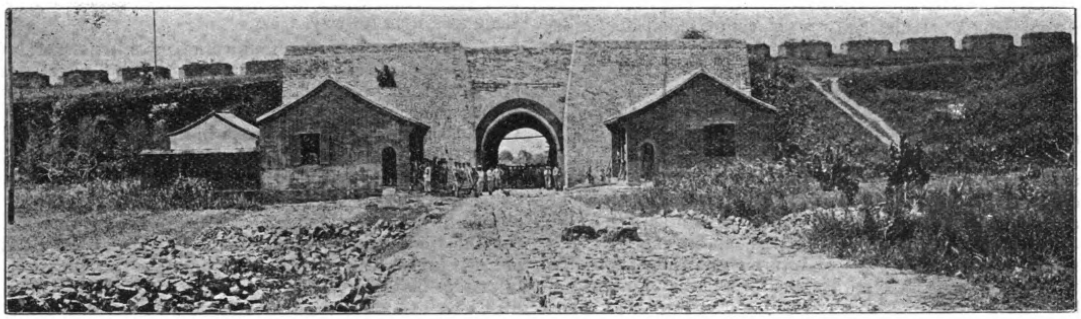
The line from Nanking to Hweichow would pay for itself by the local traffic which it would develop, and it would open up a stretch of country containing great possibilities, but it never is likely to form part of a trunk line carrying through traffic.

The station for Hweichow might be placed outside the West Gate of the town where is the only level ground, but this would cost a good deal to raise and protect, as two sides of it would be washed by the river when in flood.

The second section of the railway from Hweichow to Nanchang is for half the distance through a very mountainous country, the principal formation of which is a hard dark shale which makes it unlikely that any minerals will be discovered there. It is cut up into narrow, winding valleys by numerous streams, the hills rising in most cases from the water's edge without any flat ground between. The climate is warm and damp, and it is on the sides of these hills that tea is grown, particularly on the Southern and Western sides of the watershed.

It is essential that the railway should pass Tunki, one of the largest and busiest towns in the territory, and up to here and for some distance beyond, the country is level and easy, whichever route is finally adopted.

Mr. Foord, on his way westwards, first examined the most southerly valley, which leads up to a pass near Litakun, where



NANKING CITY RAILWAY.—Opening in the city wall for the railway.

After crossing the summit the line descends into a narrow valley which widens out into a flat plain for the last fifteen miles before Hweichow, and this is highly cultivated and thickly populated.

Coal outcrops at intervals all the way from Ningkwofu to Hweichow, and, near Linchi, a very fine quality of anthracite is found. Gold, silver, copper and iron are also said to exist in this district.

Hweichowfu is not a very important town from a business point of view, but its position at the head of the navigable river leading to Hangchow, and at the point of junction of several other streams which are navigable in the summer, marks it out as certain to be eventually the meeting place of several lines of railway when the country is more developed. It is perhaps best known as the headquarters of the Chinese ink industry, but this is a very small trade where freights are in question.

The whole of the trade of this district right up to the watershed which roughly divides Southern Anhui from Kiangsi, finds its way to Shanghai, via the Tsien Tang River and Hangchow, the latter place being only three days' distance by boat from Hweichowfu.

It is not at all an easy matter to divert the ancient course of trade and force it to take a new route, and this can only be done by offering facilities markedly superior to those of the old route.

Nanking, if it was ever a market for produce from the interior, has long ceased to be so, and Shanghai now is the shipping port for the valuable tea industry which centres at Tunki, about 16 miles south of Hweichow.

a tunnel about 2¼ miles in length is unavoidable. Then for many miles, as far as Wuyuan the valley is very narrow and difficult; after that the hills become lower, the shale formation giving place to red-stone, with room, in most places, to get the railway between the river and the foot of the hills.

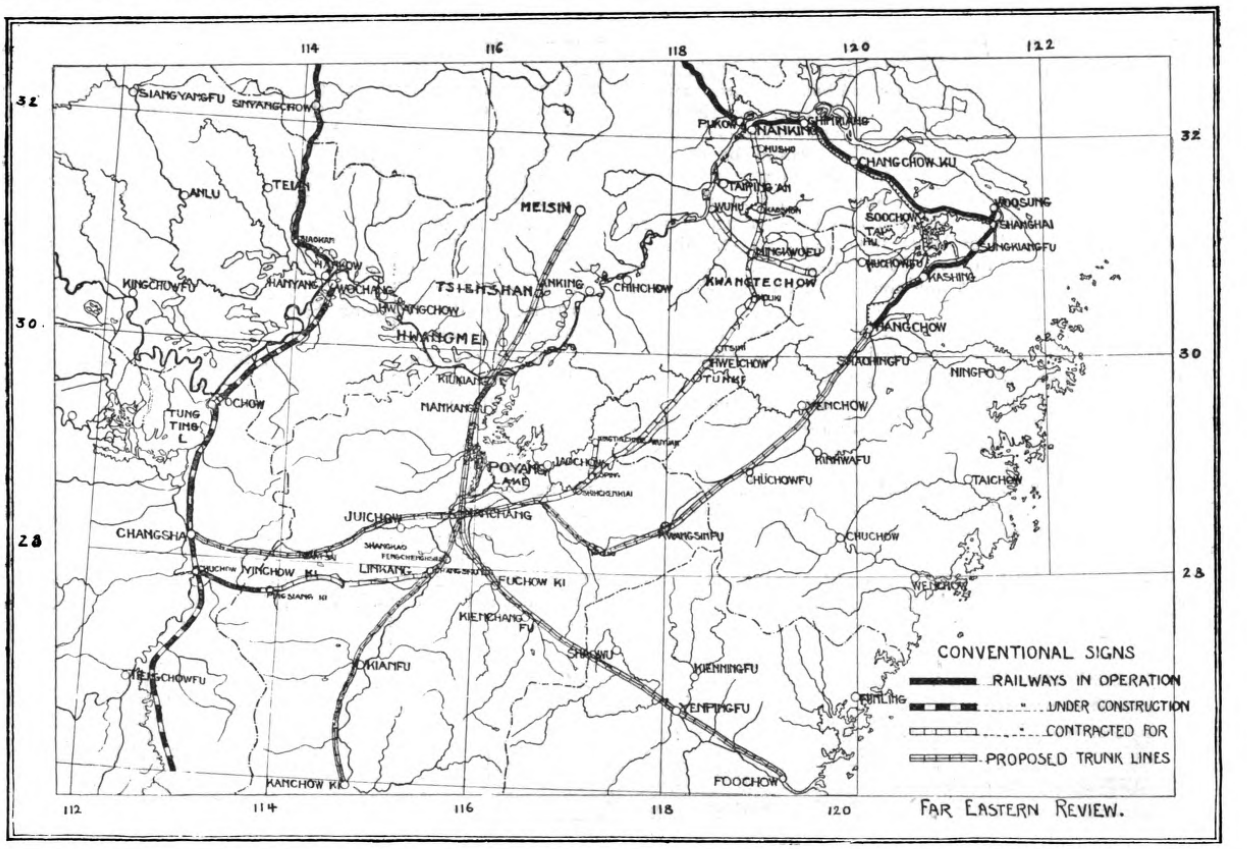
Between the summit and Wuyuan the line must be mostly cut out from the side of the hill; there would be many short tunnels or deep rock cuttings, where the bends of the river are too sharp for the minimum curve permissible on the railway. There must also be a large amount of stone retaining wall where the hills are too steep to cut out the full formation width of the railway, and protective works where it is liable to damage from the floods which rise with incredible rapidity in these narrow valleys.

From Wuyuan to Loping the line is fairly easy, and there are some broad side valleys where large quantities of rice are raised for supplying the tea growing districts which are too hilly for its cultivation.

From Loping the engineers went north to Kingtehchen and tried several passes through the watershed which runs north west from Litakun where it was first crossed.

The further north one goes the higher the mountains and the rougher the country generally and the easiest pass found, that near Tangkengkeou, requires the same gradient of 1 in 50, and a tunnel of almost identically the same length as that on the Loping route.

After careful consideration Mr. Foord came to the conclusion that the valley of the Loping River should be selected both because it is straighter and easier; also because the towns on this



The projected line from Nanking to Pingsiang is shown by the sign "contracted for." The trunk lines are shown by a similar sign with a third line in the centre. The trunk line shown passing south to Changshu Kianfu and Kanchow-ki will continue to Canton. The trunk line from Nanchang to Meisin would be continued north to join with the line from Peking.

route are much larger and more numerous, and far more ground is devoted to the cultivation of tea, the carriage of which must form the principal source of revenue of this part of the railway.

Another point of some importance is that the floods on the Kingteh River rise to a much greater height, which would, of course, add materially to the cost of the railway.

Kingtehchen is the chief place of manufacture of porcelain in China. Its wares find a market all over the country, and it should certainly be connected with Loping by a branch line, about 28 miles in length, through a very easy country. Loping, however, is in most ways the more important town of the two, being the distributing centre for a very large district, while Kingteh has very little business besides its one industry. This industry, however, is a considerable one, the yearly production being said to be worth $5,000,000, and this should bring in a steady revenue to the railway.

Beyond Loping the route to Nanchang would be the same whichever way through the hills is finally selected for the railway up to this place, and the choice lies between a southerly line through rolling country and one near the Poyang Lake which, though more direct, is over ground which has a depth of flood water on it of about 20 feet. This also requires some very costly bridge work, and for these reasons cannot be recommended.

The crossing of the river at Loping is the first big bridge on the line and here fifteen 100-feet spans would be required, but the foundations are probably good, rock being found on the surface in many places in the river.

About 50 miles further on the big river Kinkiang is crossed near Tachitu. This will require at least 2,000 feet of waterway and a high bank leading up to it, as the valley is subject to very heavy floods.

This river-crossing is one of the most important points on the whole line as it is up this valley that the great trade route to Chekiang runs, and it is here that the railway may hope to pick up a good deal of traffic which at present goes on down the river to Poyang.

For the next 30 miles the line passes through rolling country, and then crosses a stretch of 20 miles of ground from 10 to 20 feet below flood level. This country is all bunded and very productive, but the higher bank which must be built to keep the line above the water in case of the bursting of the dyke, will be costly.

The last 14 miles into Nanchang is over a flat, elevated plain, very thickly populated and with an immense traffic along the road leading to the city.

At present Nanchang does practically no business with the country lying to the east, as it is easier to take things by water to Jaochow and thence to Kiukiang, but as navigation is already difficult and the Poyang Lake is rapidly silting up, there is no doubt that the railway will be able to get most of the business as soon as there is a through rate to Kiukiang.

It is not possible for this railway to pass close to Jaochow, but as this is a large and important town the question of a branch line might be considered later.

The principal production of the country between Loping and Nanchang is rice, but at the former town the coal measures are again encountered and a fair quality of bituminous coal is mined, though for lack of transport only a very small quantity can be at present marketed.

Nanchang is a very large and busy city, and is destined by its situation to be one of the greatest railway centres in China, but as it is distant about ninety miles from Kiukiang, the nearest deep water port, it is evident that the railway between these two places practically controls the traffic of all the other railways which converge on Nanchang.

The position of the station at Nanchang is rather a problem as it must be placed as near as possible to the town and also in a

place where convenient junction can be made with the other lines which will sooner or later radiate from this city.

The ground on the west side of the river would be in some respects the most suitable, but it is low and has the disadvantage of being the other side of the river from the city. On the whole the side near the East Gate would be the best. This is high and fairly clear of buildings and sufficient land could be obtained for the large workshops which would be required here.

This means that the trains from Nanking would come into the station from the South East and back out again when proceeding to the South or West but would go straight on towards the Kiukiang Railway. The trains must in any case be reversed for one direction and this seems on the whole the best arrangement.

It will probably be necessary to build a short branch line to the river, south of the city, and to put in sidings for construction purposes and later on for goods traffic.

From Nanchang to Pingsiang there are two routes; one through Changshu and the other through Juichowfu. There is probably not much to choose between them as far as cost is concerned, and the length of both would be very nearly the same, but the former is recommended because Changshu is a very important business town and because a direct line from Nanchang to Changsha would traverse most of the second route.

Also, the first sixty miles of the first route, as far as Changshu, will form part of the great trunk line to Canton, and the first thirty miles of a similar line to Fukien.

latter would follow is equally productive with just as large and important towns and it is easier from an engineering point of view. The two lines are far enough apart not to interfere with each other in the least, and both would bring traffic to the eastward continuation of the railway after their junction with it.

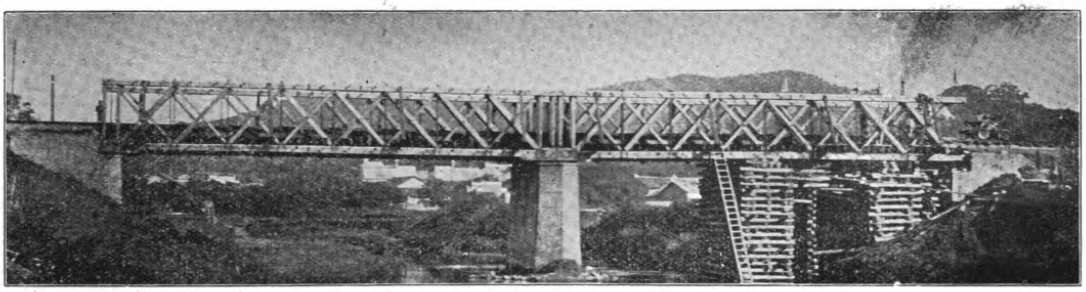
Coal is found nearly all the way from Nanchang to Pingsiang, and there is an almost continuous outcrop on the north side of the road for the last eighty miles of the way.

The Nganyuen mine is the only one which has been properly opened up and equipped with modern machinery and it is expected that the output of this will come up to 3,000 tons a day by the end of this year. All or nearly all of this amount is consumed by the Hanyang Steel Company, which is also the owner of the mine.

On the east side of the hill at Shanpu there are porcelain factories, and iron and other mines exist no great distance away. There is no doubt that Pingsiang is capable of development into a great industrial centre.

About one third of this railway runs through a mountainous district where Mr. Foord does not think a gradient of 1 in 50 can be avoided, so that the cost of working must also be high and it is evident that the freight charges cannot be sufficiently lowered to attract any long distance through traffic.

The country through which the line passes is rich and worth developing for its own sake but for the purpose of a great east and west trunk line another route must be selected. This is fortunately to be found a little to the south of the



PINGSIANG-CHUCHOW RAILWAY.—Wooden truss bridge near Pingsiang City.

The first thirty miles from Nanchang are on high and good ground, but the next thirty are in the valley of the Kan River and an average bank of about fifteen feet high would be necessary.

A long bridge is required for the crossing of this river near Changshu, about 3,000 feet for the main river and perhaps another 1,000 feet in small spans to carry the flood water, but it may be possible to find a place not too much out of the line where the banks are higher and a shorter bridge would suffice.

As soon, however, as the line turns westward up the Linkiang valley the land is higher and in very few places is the ground flooded at all.

From here up to the range of hills which separates the streams running east from those running west, the line is easy and the country mostly productive and well populated, the town of Yuanchowfu being large and comparable with Ningkwofu, and there is a very heavy traffic on the road between it and Pingsiang.

The hills mentioned form a considerable obstacle to the railway, but by employing a gradient of 1 in 50 a tunnel could probably be avoided altogether, and there is a possibility that, by joining the existing railway for a few miles further down, a quite easy route through the hills may be found.

It is a question of policy rather than of engineering to decide whether to spend the money which would be required to make this railway a first class line, or to construct it in a manner suitable for local traffic and to build the trunk line direct from Nanchang to Changsha. The route which this present line and runs up the valley of the Kin river and down that of the Tsientang connecting with the Chekiang Railway at Hangchow.

This route presents no engineering difficulties, the watershed being low and easily crossed, while there is at the present time a very large traffic carried on by water, although the rivers are only really navigable in the summer, and there are said to be 900 mules engaged in the business of transporting the goods over the short distance which separates one river from the other.

Referring to the line from Nanchang to Pingsiang, Mr. Foord says that the railway from the mines to Chuchow was built solely for the transport of coal. It has been very badly located and has been built in such a manner that it would be next to impossible to convert it into a line suitable for through traffic. It has already nearly as much traffic as it can carry on a single line and the best policy would be not to spend much money on reconstructing it, but merely to put it into a condition of safety and build another line direct from Nanchang to Changsha for through traffic. Both lines would pay for themselves by their local traffic, but for through traffic the line via Pingsiang would be more than half as long as the direct line.

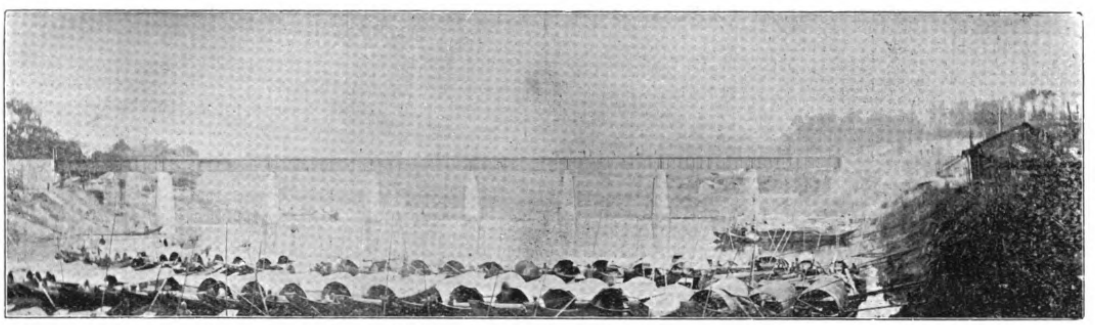
Changsha is a very important place and with the long line to the west which has lately been put in hand, it is certainly worth a direct connection with Nanchang.

Mr. Foord emphasises that he does not wish to imply that the line to Pingsiang is not well worth building, as nearly one third of it forms part of the most important main line to Canton. This latter, which would open up the immense coal deposits and

other riches of Kanchow, is far the easiest route between Canton and the north, beyond all comparison better than the Canton-Hankow line, and with an extension north of the Yangtse, joining either the Tientsin-Pukow Railway or the Peking-Hankow Railway, would form the quickest and easiest connection between Peking and Canton.

As the mountainous country traversed by the projected railway is cut up into very numerous valleys, many of which are not shown on the maps and have no roads up to them, it is quite possible that a prolonged examination of the country may result in the discovery of a much better way through the main divides. This is so important that no amount of time spent on survey work would be wasted. What is really wanted is an accurate map taking in a fairly large extent of the country, and, to make this, 5 or 6 small parties of engineers, mainly Chinese, should be sent out to do traverse work before even a preliminary attempt at location is made. Much of the survey would be very tedious and difficult as the hillsides are densely clothed with vegetation through which lines must be cut before any work with an instrument can be done, and in this respect this district differs from most other parts of China in which railways have hitherto been built.

During construction the difficulties of transport will be seriously felt, especially for getting up heavy machinery and explosives to the sites of tunnels, but, the foundations being good in the mountainous parts, bridges could mostly be built of masonary and material obtainable in the vicinity instead of field spans which could not be carried up country until the rails are laid.



PINGSIANG-CHUCHOW RAILWAY.—Eight 60 ft. span plate girder bridge over the Lukiang near Liling City.

One thing struck Mr. Foord forcibly while exploring the hill country from valleys across the intervening ridges and that is that no railway can hope to develop more than a very narrow strip of country until practicable roads are constructed to connect the towns on each side of the line with the railway, and no effort should be spared to induce the inhabitants to take this much needed reform in hand.

The loan agreement signed in connection with this railway between the Chinese Government and the British and Chinese Corporation is for £8,000,000 at five per cent interest, the security being the line itself. Provision is made that the Corporation shall have the preference of supplying capital for any railway that might be built between Hweichowfu and Hangchow, or from any point on the Nanchang-Pingsiang railway to the Hukuang railway. The agreement provides for the appointment of a British Engineer-in-chief, and a British accountant. The British and Chinese Corporation receives the usual five per cent. purchasing commission.

Mr. T. C. Sun has been appointed Chinese Managing-Director, and Mr. Frank Groves, late Engineer-in-Chief of the Canton section of the Canton-Kowloon railway, has been made Engineer-in-Chief of the new line.

Conditions of the Agreement

The Agreement in connection with this railway, consists of twenty-four articles and was signed on March 31, 1914 by Mr. Chu Chih-chien, Minister of Communications; Mr. Chow Tze-chi, Minister of Finance, and Mr. S. F. Mayers, representing the British and Chinese Corporation.

Under the Agreement the Chinese Government authorises the issue of a five per cent. gold loan for £8,000,000 to provide capital for the resumption by the Chinese Government of the Anhui Provincial Railway Company's work and property in the neighborhood of Wuhu; the construction of a Government line of railway from Nanking to Nanchang, and with connection to Wuhu and Kuangtechou, and from Nanchang to Pingsiang, to connect with the existing Government railway from Pingsiang, to Chuchow; and for the incorporation of the Chuchow-Pingsiang railway as an integral part of the railway to be constructed under the agreement from Nanking to Pingsiang. The period of construction is estimated at four years from the actual beginning of operations, construction not to be delayed more than six months from the date of the signature of the agreement.

It is provided that a branch line on a point on the main line at or near Hweichowfu, passing through Yuchien to Hangchow and a connecting line from the Nanchang-Pingsiang section to a point on the Hupeh section of the Hukuang railway, if found by the Chinese Government to be profitable or necessary later on, shall be built by the Chinese Government with funds at their disposal from Chinese sources and if foreign capital is required preference will be given to the agents, the length of such lines to be determined by the Chinese Government.

The term of the loan is to be forty-five years, amortisation to begin upon the expiry of the fifteenth year, the loan being guaranteed by the Central Government and being secured by mortgage of the railway and the revenues of all descriptions derivable therefrom. The loan will be issued to the public in two or more series of bonds, the first issue to be made to an amount not exceeding £4,000,000, sterling, as soon as possible after the signature of the Agreement. The price of the bonds to the Chinese Government is to be the actual price of issue to the public in London less flotation charges of four points retainable by the Corporation. The second and subsequent series are be issued in time to permit of uninterrupted continuance of the work of construction, the proceeds of the loan to be paid to the credit of a Nanking-Hunan Railway Account with the Hongkong and Shanghai Banking Corporation in London, interest at the rate of three per cent. to be granted on the credit balance kept in London, and the usual rate on sums transferred to China.

The accounts of the railway will be kept in Chinese and English in accordance with accepted modern methods under the direction of a duly qualified British Accountant.

The construction and control of the railway are to be vested entirely in the Chinese Government, the Engineer-in-Chief to be a qualified British Engineer to be appointed by the Ministry of Communications. He will take orders from the Ministry of Communications or the Managing-Director of the line, and his services are to be retained during the currency of the loan.

The Corporation will act as Agents for the Railway Administration during construction for the purchase of all materials, plant, and goods required to be imported from abroad. For all important purchases of such materials tenders are to be

called for by the Director-General of Railways of the Ministry of Communications, or the Managing-Director or his duly appointed representative, in the case of all tenders indents and orders for the importation of goods and material from abroad; the Agents are to purchase the material required on the terms most advantageous to the railway, and charge the original net cost of the same plus a commission of five per cent. In return for the payment of this commission the Agents are prepared to superintend the purchase of all foreign materials required for the construction and equipment of the railway, which shall be purchased in the open market at the lowest rate obtainable, it being understood that all such materials are to be of good and satisfactory quality and that the Railway Administration shall have the right to reject on arrival in China materials which do not come up to specifications. At equal rates and qualities goods of British manufacture shall be given preference over other goods of foreign origin. With a view to the encouragement of Chinese industries preference will be given at equal price and qualities, over British or other foreign goods, to Chinese materials and goods manufactured in China. No commission will be paid to the Agents upon purchases of such materials and goods. After the completion of construction of the railway the agents will be given the preference of such agency business during the currency of the loan for the supply of foreign materials as the railway administration may require on terms to be mutually agreed upon.

THE EASTERN PIONEER COMPANY.

In the last issue of the FAR EASTERN REVIEW we published the history of what is known as the Pritchard Morgan Concession for the working of the mineral deposits of Szechuan Province. We now glean from the London *Financial News* something of the financial state of the Eastern Pioneer Company which was formed in 1899 to take up and work the Concession secured by Mr. Pritchard Morgan.

The Eastern Pioneer Co., Ltd., was registered in October, 1899, with a nominal capital of £300,000 in £1 shares, to adopt an agreement with Wm. Pritchard Morgan, M.P., and to carry on business as land, estate, and mine owners, explorers, prospectors, miners, metallurgists, quarrymen, timber merchants, and mill owners. In January, 1902, a circular (signed "Geo. T. Broadbridge, secretary") was sent to shareholders inviting subscriptions for 25,000 shares, forming a portion of 49,993 unissued shares. The circular said: "At the formation of the company provision was made for a working capital of £100,000, and 50,000 of the fully-paid shares alloted to the original concessionaires were set apart as a bonus for the provision of that capital. Out of the 49,993 shares in reserve the directors have resolved to issue 25,000, and, with the co-operation of the vendor, 25,000 fully-paid concessionaire shares will be available as a bonus to the subscribers of this £25,000, in the proportion of one bonus share for each share subscribed for. The provision of this capital and the very large interest which the company holds in the British and Korean Corporation, Ltd., which acquired the Korean Concession, should place the company in a thoroughly sound and strong position."

In February, 1907, a prospectus was filed, offering 300 first mortgage debentures of £100 each, repayable on December 31st, 1908, carrying interest at 8 p.c. p.a. The debentures were to be secured by (1) a first mortgage over the Morgan Concession, province of Szechuan, (2) deposit with trustees of 200,000 ordinary shares of the British and Korean Corporation, Ltd., (3) a floating charge on the undertaking and general assets. The prospectus stated that nearly one-half interest in the British and Korean Corporation was held by Messrs. Jardine, Matheson & Co. and their friends, and that the mines were under their management.

There has been some laxity in the filing of the company's returns, many of these being filed from three to eleven months after the statutory date, and the enactment that a company must hold a general meeting once at least in every year appears to have been honoured more in the breach than in the observance. The last annual summary was made up to December, 31st, 1913 (no meeting having been held during the year), and filed on March 14th, 1914. It showed 250,007 shares issued, of which 50,007 had been fully paid up in cash and 200,000 were credited as fully paid. There were no debentures or other charges requiring registration. There is nothing on the file to show that any of the debentures offered in 1907 were ever issued, and the balance-sheet to June 30th, 1908 (prior to which no company was required to file a balance-sheet), did not mention any debentures among the liabilities. The directors at the end of 1913 were: Colonel Weatherall, C.B., W. Pritchard Morgan, J. W. Mayer, A. Diehl, and John Crisp. The principal shareholders at the same date were:—

Mr. T. C. Sun, Managing Director of the Nanking-Hunan line.

Mr. S. B. Shen, who will be in charge of the Chinese Survey parties of the Nanking-Hunan line under Mr. Frank Grove.

	Shares.
Executors of E. M. Bainbridge, 146, Lauderdale Mansions, W.	1,250
Sir Charles Friswell, 1, Albany-street, N. W.	1,000
Sir William Ingram, Bart	1,271
Timothy M. Healy, K.C., M.P	1,500
William Keswick and John M. Macdonald, 3, Lombard-street, E.C.	80,000
Lord Merthyr, Aberdare	5,000
Executors of Sir John Blundell Maple...	4,500
C. Baker, Brussels	1,500
Banque d'Outremer, Brussels...	1,000
J. H. Bush, Shanghai	1,000
Compagnie Internationale d'Orient, Brussels	1,000
Crédit Générale Liégeois, Brussels ...	1,500
Reginald Carr, Stock Exchange, E.C. ...	1,900
J. W. Circuitt and C. H. Passingham, 72, Lombard-street, E.C.	2,000
Chevalier Raphael De Bauer Brussels...	1,920
G. and M. H. De Lavelege, Brussels ...	1,500
F. E. Dixon, 81, Gracechurch-street E.C.	2,400
E. Empain, Brussels	1,500
G. A. Edell, 4, King-street, E.C.	1,000
J. F. Edell, 4, King-street, E.C.	2,500
F. Gordon, 1, Devonshire-square, E.C.	1,000
E. A., K. R., and W. R. Hay, 20, Abchurch-lane, E.C.	1,000
L. Lambert, Brussels...	1,500
Samuel Lazarus, 3, Drapers'-gardens, E.C.	3,500
J. W. Mayer, Denecourt, Percy-road, Boscombe	1 330
William P. Morgan, 1, Queen Victoria-street, E.C.	2,191
J. V. B. Murdoch, 140, Princes-street, Edinburgh...	3,700
Miss G. P. Morgan, Cotswold, Staines	4,667
A. E. Messer, 14, Old Jewry Chambers, E.C.	3,050
N. W. Mellor, 7, Great Winchester-street, E.C.	4,500
Executors of F. Pavy, Salisbury House, E.C.	2,834
Countess Augusta A Piper, Skane, Sweden	1,000
F. Phillipson, Brussels	1,000
W. A. Paynter, Silvermead, Knowlegreen, Staines	5,300
G. E. Philcox, Stock Exchange, E.C. ...	1,000
C. H. Regnart, 144, Tottenham-court-road. W.C...	1,350
Railway Share and Trust Agency Co....	20,000
G. A. C. Shenley, Warsash, Southampton	1,000
W. B. Smith, c/o J. W. Russell, M.S., 72, Newhall-street, B'ham	1,000
H. T. Tatham, 3, Finch-lane, E.C... ...	1,000
S. Wilner, Brussels	5,800
Colonel H. B. Weatherall, Manor House, Staines...	1,000
B. F. Yorke, 19, Throgmorton-street, E.C.	1,000

As a copy of the balance-sheet to June, 1908, has been filed with every annual return from 1908 to 1913, it would appear that no later accounts have been prepared. At this date there was £4,623 due to creditors, and cash at bank amounted to £20. The auditors remarked (*inter alia*): "The price originally paid for the assets acquired by the company and the expenditure since made by the company are included in full in the balance-sheet. The present value to the company of the expenditure in connection with Korea is of little or no value, and the value of the assets in China is very uncertain. The British and Korean Corporation, Ltd., is in liquidation, and we are informed that the preference shares, which are included in the balance-sheet at cost, are of no value."

"No better preparation for independence could be made than that provided by the new Jones bill. Substantially autonomous government is given. Certain checks and balances are prescribed which are regarded as essential by the United States. Meanwhile, the Filipinos are given practical management of their internal affairs.

"Most important is the declaration that the United States purposes to recognize the independence of the Philippines as soon as a stable government can be established therein. All those who believe in the capacity of the Filipinos for independence should be confident of the result. Great progress has been made this year—still more may be made under the new legislation. If success crowns the new undertaking, opponents of Philippine self-government must rapidly diminish, and their arguments will have been refuted.

"The resident commissioners in Washington have worked for a fixed date for independence. That proved impossible at the present time. President Wilson has furnished most excellent reasons for preferring the new Jones bill. The Filipino people should support this legislation. In that way the patriotic Filipino can at this juncture best serve his native land; in that way independence may be achieved with self-respect and the good will of all.

"When the bill becomes a law, I feel confident that all Americans here will unite in supporting the Philippine policy of our country; cheerfully and unselfishly they will aid in the future working of this new form of government."

THE SHASI-SHINGYIFU RAILWAY.

On Saturday, July 25, a final agreement was signed between the Ministry of Posts and Communications and Messrs. Pauling and Company, Limited, of London for the construction of a railway starting from a point on the Yangtsze River opposite the city and port of Shasi, in the Province of Hupeh, through Lichow, Changteh, Shenchow, Yuanchow, Chenyuan, Kweiyang, Anshunfu to Shingyifu, in the south-western corner of the Province of Kweichow, with a Branch from Changteh to the city of Changsha, the capital of the Province of Hunan. The loan is for £10,000,000 for forty years at five per cent. interest. The railway is to be built by contract, a firm of British consulting engineers acting with the Chinese managing director in drawing plans and supervising the work. No section is to be started without specifications and costs approved by the Chinese and the price of the work will consequently be kept down as low as is consistent with efficiency. A firm of British accountants will be engaged to deal with the accounts of the loan, which is secured on the line and is also guaranteed by the Government.

We have already made descriptive reference to this proposal in the FAR EASTERN REVIEW of February 1913. The line will follow the old established trade route as far as possible, linking together the chain of cities, towns and villages in the fertile valley of the Yuan River and those located along the highway stretching across the breadth of Kweichow, following the identical route suggested by Consul Bourne in his report on the trade of Central and Southern China in 1898, as being the best and most likely to pay.

Since time immemorial communication between central China and the southwestern provinces has followed the only feasible and practical natural road. Trade and travel have been confined to what is known as the great Southwestern Trade Route, one of the important main arteries of the old Empire. From Hankow across the Tungting Lake and up the turbulent Yuan River into western Hunan, over rapids and shoals, the small junks and sampans are still sailed or laboriously hauled or poled as far as the head of navigation at Chenyuan in the province of Kweichow. From this point all goods are transferred to the backs of coolies or mules and so carried the three hundred or more miles across Kweichow, ever upwards to the higher levels of the Yunnan plateau, where the loads are again transferred to carts. The entire province of Kweichow, the eastern part of Yunnan and parts of Szechuan have been dependent for centuries on these slow, uncertain and expensive methods of transportation, with the natural consequence that their development has been retarded, trade reduced to a minimum, and the surplus population of the other provinces have overflowed into more accessible regions. Nowhere in China is the need for a railway greater than in Kweichow, and nowhere does it promise more profitable returns.

By virtue of its commanding position Hankow will be the great future railway centre of China, from where the main trunk lines will radiate in all directions. Insurmountable natural obstacles, however, make it impossible for the south-western trunk line to start directly from Hankow. The presence of the Tungting Lake, an immense natural reservoir for the flood waters of the Yangtsze River, and the maze of rivers, creeks, canals, and smaller bodies of water in the immediate country to the southwest of Hankow, compel a deviation from the straight line. The Chinese Government has, therefore, wisely selected the nearest commercial centres to the northwest and southeast of the lake district as the termini of the proposed southwestern trunk line. At Shasi, the nominal terminus of the line, connection will be made in future with the German section of the Hukuang Railway (now under construction) thus providing a rail outlet to Hankow on the east, and with the cities of the Szechuan Railway to the west. At Changsha, the eastern terminus of the line, connection will be made with the great north and south trunk line now under construction (Canton-Hankow) thus providing another outlet to Hankow on the north and with Canton to the south. At this point connection will also be made with the future Changsha, Nanchang, Nanking railway this providing a direct through outlet to the sea at Shanghai. The Agreement for the construction of this last line was recently entered into between the Chinese Government and the British and Chinese Corporation, and is dealt with elsewhere in thus issue. It will be seen by a glance at a map that the connection at Changsha with the above line will create a continuous trunk railway from the sea at Shanghai through Nanking, Nanchang, Changsha, Changteh, Yuanchow and Kweiyang to Shingyifu. The combined systems thus connected, although owned and operated by the Chinese Government, are being financed and constructed by exclusive British interests. The Changsha section of the Shasi-Shingyifu railway is therefore of the greatest importance as providing the necessary link for through goods and passenger traffic from the sea coast to the extreme southwest of China, as well as for connecting with the other main systems. Although Shasi is the nominal terminus of the line, it is clear that the strategical traffic point of the new line will be located where connections are made with the other great trunk lines at Changsha, the capital of the province of Hunan.

The two lines from Shasi and Changsha will join to form the main southwestern trunk line at the port of Changteh, the largest commercial and trading centre in the Province of Hunan, located near the south-west corner of the Tungting Lake on the banks of the Yuan River. From this great distributing market, the line will proceed up the valley of the Yuan River, linking together the chain of cities, towns and villages which are closely scattered along the valley. Through Shenchow and Yuanchow, to the head of navigation at Chenyuan, and thence through the cities, and towns on the Kweichow highroad to the provincial capital at Kweiyang, and again westwards through Anshunfu to the terminal on the southwestern border of the province at Shingyifu. Here the line will connect with the Yamchow, Yunnanfu-Chungking Railway, the Agreement for the construction of which was entered into in January between the Chinese Government and the Banque Industrielle de Chine. This connection will provide for through rail communication with the city of Yunnanfu, the capital of Yunnan Province, from where a railway is already in operation into Indo-China. A glance at a map will show that apart from the purely local importance of the Shasi-Shingyifu line as a factor in the development of the districts through which it will pass, it will constitute a link in the chain of railways providing through communication from Europe to Indo-China and the British possessions in the Malay Peninsula. Rail communication between Europe and Hankow has been established now for several years, and as the Canton-Hankow, the Shasi-Shingyifu and the Yamchow-Yunnan lines are completed, through service will be possible from Paris to Haiphong. As the Governments of Indo-China and Siam are constructing lines which will ultimately connect, the Chinese lines will supply the link for the future rail communication between Europe and Singapore.

RECEIPTS AND EXPENDITURES OF CHINESE RAILWAYS

The following table gives the returns of various Chinese Railways from 1909 to 1912 inclusive. The figures before 1909 are omitted owing to the difficulty of distinguishing the traffic from the capital amounts. The Kaifeng-Honan Railway was not open to traffic in 1909, and in 1912 it was absorbed in connection with the Lung-Tsing-U-Hai Railway, so statements for those two years are omitted. The Changsui extension of the Peking-Kalgan railway, the Canton-Kowloon and the Tientsin-Pukow Railways were not completed before 1912. The figures here given are traffic receipts which include income from the passenger and goods services, rentals, deposits, interests and other miscellaneous items. Expenditures include traffic expenses, interest on loans, expenses for repairs and maintenance. There may be some slight discrepancies in the figures for 1912, the first year of the Republic of China, but we may not be able to determine the precise figures until the final statement for the whole of that year is issued.

	Year	Receipts	Expenditure	Surplus	Deficit
	1909	11,698,332	5,259,294	6,439,038	
	1910	11,116,070	4,635,779	6,480,291	
Peking-Moukden	1911	10,943,191	5,136,474	5,806,717	
	1912	13,870,213	6,952,093	6,918,120	
	Total	47,627,806	21,983,640	25,644,166	
	1909	11,114,614	6,849,557	4,265,057	
	1910	12,242,858	7,341,907	4,900,951	
Peking-Hankow	1911	11,398,460	8,563,249	2,835,211	
	1912	13,673,218	7,468,111	6,205,107	
	Total	48,429,150	30,222,824	18,206,326	
	1909	1,428,132	1,729,493		301,361
	1910	1,756,493	1,790,466		33,973
Chengting-Taiyuanfu	1911	1,661,975	1,684,230		22,255
	1912	2,509,521	1,962,972	546,549	
	Total	7,356,121	7,167,161	188,960	
	1909	356,517	672,918		316,401
	1910	477,593	768,237		290,644
Taokow-Chingkwachen	1911	466,544	755,753		289,209
	1912	576,043	851,161		275,118
	Total	1,896,697	3,048,069		1,171,372
	1909				
	1910	555,300	1,442,920		887,620
Kaifeng-Honanfu	1911	612,500	1,473,900		861,400
	1912				
	Total	1,167,800	2,916,820		1,749,020
	1909	1,796,083	2,877,152		1,081,069
	1910	2,018,349	2,955,534		937,185
Shanghai-Nanking	1911	2,251,072	3,038,242		787,170
	1912	2,675,943	4,160,660		1,484,717
	Total	8,741,447	13,031,588		4,290,141
	1909	604,217	262,821	341,396	
	1910	686,289	295,156	391,133	
Chuchow-Pingsiang	1911	444,760	271,520	173,240	
	1912	240,020	229,243	10,775	
	Total	1,975,286	1,058,742	916,544	
	1909	476,442	802,598		326,156
	1910	1,329,632	1,254,237	75,395	
Peking-Kalgan	1911	1,456,241	979,447	506,794	
	1912	2,209,031	919,361	1,289,670	
	Total	5,501,346	3,955,643	1,545,703	
Changsui Extension	1912	382,679	209,316	173,363	
Canton-Kowloon	1912	608,107	1,407,562		799,455
Tientsin-Pukow	1912	5,689,431	6,065,025		375,594

UNIFICATION OF CHINA'S RAILWAY ACCOUNTS

The first fruits of the work of the Commission on the Unification of Railway Accounts and Statistics have been borne in the shape of the promulgation of the Classification of Capital Expenditures, for both Construction and Financial accounts, together with general rules and forms, etc., which have been drawn up in Chinese, English and French.

This must be highly gratifying to those who have shouldered the heat and burden of the work, for when the Commission began its unification labors last year there were many difficulties which appeared insurmountable, chiefly among them being the lack of precedents for such an undertaking and opposition from many directions. This being the first time in China's railway history that unification of a fundamental problem on a large scale has been taken up—one, too, which involved the modification of many existing practices on all the railways—it was but natural that much apprehension should prevail at the commencement. It was, in fact, only due to the firm stand taken by Minister Chu Chi-chien, and the continued support given by Minister Chou Tze-chi, and Mr. Yih Kung-cho, combined with the co-operation of all men taking part, that the Commission was able to carry out its programme so far.

The first question confronting the Commission was how to find proper men to do the work. In so far as the contemplated unification would involve the change of existing practices on the different railways and would also have to be suitable to local conditions, it was at once thought desirable to invite the Chief Accountants of the various railways to take an active part in the proposed reform. On the other hand, since the requirements of the Finance and Auditing Departments had to be kept constantly in view, it was also of necessity to have the services of men who were familiar with the requirements of the Central Government as well as with the work. The Commission, therefore, recommended the appointment of a number of the members of the Ministry interested in accounting and the Chief Accountants of the different railways as members of the Commission. In order to enable these men of the Ministry to get a clear insight into local conditions so as to understand and appreciate the local accounting problems of the railways, the Commission first sent two of the members to each one of the railways to make a thorough investigation of their organization and working. In so far as Japan was a neighbour with a similar written language, and had perhaps gone through similar difficulties in adopting and unifying her railway accounting system, her experience was, therefore, deemed of value, and two members, versed in Japanese, were deputed to make a study of the organization and working of the South Manchurian Railway. To take advantage of the experience of other countries, Dr. Henry C. Adams, the expert in charge of Railway Statistics and Accounts of the United States Government, was engaged as Adviser, so as to obtain the benefit of both scientific and independent guidance.

These preparatory steps having been taken, the Commission commenced its labors and has held three sessions, more than seventy meetings having been held. Gradually difficulties which loomed large at the outset diminished, and the discussions in the meetings were marked with harmony and co-operation; the work progressing with great rapidity.

There being many new railways under construction in China all in need of more adequate classification, or rules to guide them in the allocation of their construction expenditures, the first question taken up by the Commission was the classification of capital expenditures, with the hope that the new roads might adopt uniform classifications before they went too far, thus saving the irksome and costly work of re-arranging their accounts later.

By taking local conditions into constant consideration, and by careful examination of practices abroad, the Commission therefore drafted the Classifications of Capital Expenditures. This is divided into two parts, the first one covering construction accounts and the second dealing with financial accounts. Special care was taken to make the classifications practicable and suitable to conditions in China; and to allocate the expenditures in such a simple and systematic manner as to enable the Government or the railway managements to see at a glance the cost of the different principal features of the property. Special effort was also made clearly to mark the lines of responsibility of the different chiefs of departments of the railway by allocating, as far as possible, the expenditures under the responsible officers. In so far as it is human nature to prefer making a good showing for oneself, by so allocating the expenses to the accounts of the responsible officers, the Commission hope to effect considerable economy.

The separation of salaries and allowances from other kinds of expenses is an improvement and should prove of great value to the country. As much railway material has to be imported, attention has been paid to show the cost of such material as compared with that of local production.

The separation of land in service from real estate will help the Government to measure the efficiency of the different managements. Rent from surplus land does not require much railway ability to realize, and in the absence of proper separation some of the railways which have much of such land have been able to swell their traffic earnings by such rent, thus making an undeserved better showing over others. This, however, is only one of many similar precautions taken to guard against misleading results of operation.

The separate treatment of the expenditures of the central mechanical works, as distinct from those of the railway proper, will help to measure the results of such works. Practically speaking central mechanical works are on the plane of outside operations for which separate or suspense accounts should be kept as in the case of a factory, failing which the efficiency and economy of such works become hard to determine. The present classification will make possible such a separate treatment of central mechanical and other special works if the Government decides so to do.

This new classification besides bringing about uniformity, which in itself is a very important thing, will enable the Government to see at a glance the different classes of expenditure in a scientific manner, and will also enable the Government to know what and how each railway costs. China may appreciate the importance of so recording costs by noting the disadvantages which have resulted from the lack of such records in other countries. For instance, the United States failed to unify her railway accounts until a late date, and this delay is now costing her some $50,000,000 in an effort to find out the cost of her railways. China also had similar experience, although on a much smaller scale, in that in the absence of proper accounts she found considerable difficulty in fixing the prices of private railways, which she desired to purchase back from the merchants. In fact the principal cause of the failure of China's private railways and big business in general is the lack of proper accounting. By adopting and enforcing a uniform classification at this stage of her railway development, similar disadvantages may be avoided.

The Classification of Operating and Other Revenues is also finished. Depreciation rules and the Classification of Running, Traffic, Maintenance and General Administrative Expenses will also be ready in a few days. In the session which took place in July, the Net Revenue, and Profit and Loss Accounts, General Balance Sheet, etc., together with forms and rules governing administrative reports, statistical requirements, etc., were dealt with. From all prospects, it seems that unless some unforeseen development takes place the Commission may reasonably expect to finish its work by the end of August.

The Commission in the course of its effort to unify the accounts found many other difficulties. For instance the different languages used by the railways, which may appear a trifling matter, presented problems not found in other countries. On account of the loan agreements and established habits of the different railways, the Commission had to use three languages in their discussions, i.e., Chinese, English and French. As some of the members only knew one or two of the three languages, considerable difficulty and delay resulted.

Since these classifications are for the Government Railways, the Chinese language naturally should be made authoritative, but here, further trouble was encountered, for scientific terms in

Chinese are not standardized. The Commission sometimes found one railway term or article described by three or four different names on the different railways and they were compelled to adopt provisionally the English terms as standard pending the unification and standardization of the Chinese terms. This is only one of the many peculiar difficulties which do not obtain elsewhere.

On account of peculiar difficulties and in order to meet local requirements, a compromise had to be agreed to on many points, making the present code far from ideal. It is, however, the best that could be done under the circumstances, and if properly enforced, will be a great improvement over the past when each road was at liberty to group its expenditures in whatever manner it saw fit. Not only every head and every item in the new accounts have been thoroughly discussed and revised, but practically every word has been carefully considered. Moreover, this uniform system is not the work of any one man, but represents the crystalized opinion of the best qualified men now available in practically all China. But the value of a uniform system of accounts, or any other system lies more in the proper enforcement and application rather than the degree of perfection of the system itself. China has been criticised often on account of her failure to enforce the rules which she promulgates.

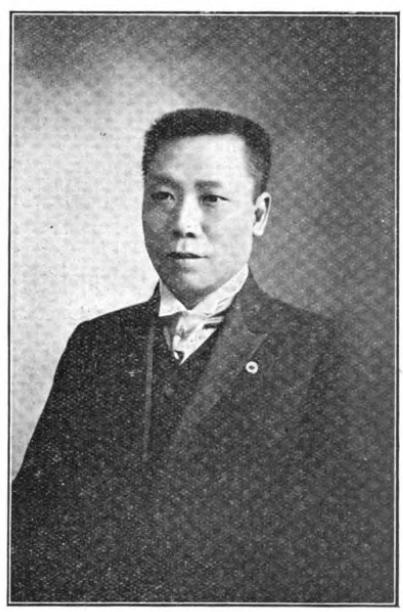
Sao-ke Alfred Sze,
Chinese Minister to the Court of St. James.

To the above effect the Chairman, Mr. Yih Kung-cho and the Vice-Chairman, Dr. Wang Ching-chun, the leading spirit in the movement, addressed the Minister of Communications, who eventually placed the whole matter before the President for promulgation. In so far as railway accounting is closely related to railway management and finance, and in so far as this is the first time that unification of an extensive and important kind has been applied to China's railways, thus starting the unification movement, it is hoped that effective measures will be taken for the proper enforcement of the proposed new system.

NEW CHINESE MINISTERS ABROAD

THE MINISTER TO LONDON

Mr. Sao Ke Alfred Sze, who has the distinction of having been appointed Chinese Minister to London at the age of 37 years, was born in Chekiang Province on April 10, 1877. He has had experience abroad which has gained for him a knowledge of Occidental life, customs, and learning which eminently fit him for the important position which he has been selected to fill. In addition, he has held responsible posts in his own country, and has an intimate knowledge of conditions in China and the multiplicity of questions which concern her politically. His first service abroad in the interests of China was in the capacity of Student Interpreter at the Chinese Legation at Washington, where he went in 1893. In 1899 he became secretary to the Chinese Commission to the First Hague Conference, and at its conclusion he was appointed attaché to the Chinese Legation at St. Petersburg, where he remained till July 1899. Proceeding to America to complete his education he graduated from Cornell University in 1901, the degree of A.B. being conferred upon him, and in 1902 he passed his examinations for A.M. Returning to China in the autumn of 1902 he was appointed Secretary Interpreter to the late Viceroy Tuan Fang, and later he served under the late Viceroy Chang Chih Tung in a similar capacity. In 1905 he was appointed First Secretary to the Commission formed to go abroad to study Constitutional Governments, and with this commission he travelled round the world and was received at the different European courts. In 1906 he became Managing Director of the Peking-Hankow Railway; being transferred in 1907 to be Associate Director of the Imperial Railways of North China. He became Customs Taotai of Harbin in 1908, and remained in that post 26 months. In 1910 he was appointed Commissioner of Foreign Affairs of Kirin, Manchuria, but before taking up this post was appointed Junior Deputy Vice-President of the Waiwupu (Board of Foreign Affairs). He was promoted to be senior Deputy Vice-President in 1911, and in April of the same year was made Imperial Commissioner to the International Plague Conference at Moukden. In October, 1911, he was appointed Chinese Minister to America, Mexico, Cuba, and Peru, but, on account of the outbreak of the Revolution in China, he did not proceed. Unlike most other foreign educated students, he refrained from associating himself with the Revolutionary movement and lived quietly in Shanghai. Upon the formation of a Cabinet by the first Premier, Mr. Tang Shao-yi, he was made Minister of Communications, from which post he resigned later, owing to ill health. In 1913 he was nominated Minister of Washington but failed to receive the confirmation of the Young China Parliament, this being the penalty he paid for his aloofness from the Revolutionary movement. In November 1913, he became Master of Ceremonies to Yuan Shih-kai and in June, 1914, was appointed Minister to the Court of St. James.



Hsia Chia-fu, Chinese Minister to Washington.

THE MINISTER TO WASHINGTON

It is a co-incidence that Mr. Hsia Chia-fu, who is the new Minister to the United States, and who has already taken up his position, is also a native of Chekiang Province. He is 40 years of age and commenced his diplomatic experience by joining the Chinese Legation in Japan as an attaché some 15 years ago. Later he went to America, and from 1903 to 1908 was the Chinese Consul in New York. While in America he decided to profit by opportunities of education and took special courses in Columbia University. On his return to China in 1908 he became a Councillor to the Foreign Office, which post he held until 1910, when he was made Commissioner of Foreign Affairs in Yunnan. After the Revolution he took up the post of Director of the Tientsin Mint, and later was transferred to Newchwang as Customs Superintendent and Commissioner of Foreign Affairs. He was acting in this capacity when he was appointed to Washington as Minister.

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CHINA'S RAILWAY ACCOUNTING DEPARTMENT

The appointment of Dr. C. C. Wang as head of the newly created Accountant Department of the Ministry of Communications in Peking is one of the wisest that the new Minister has as yet made. To Dr. Wang must go the initial credit for the excellent work that has so far been done by the Commission for the Unification of Railway Accounts and Statistics. He, in fact, was the initiator of the movement. His recognition of the tremendous importance of an early unification of accounts, his unflagging energy, and his enthusiasm, combined with his ability and knowledge of his subject enabled him to overcome early opposition and convince the then Minister and Director-General of Railways of the urgent need for such a work; and it is highly creditable to those two gentlemen that they fell in with Dr. Wang's ideas and created the Commission. In another column we record the first fruits of that organisation, and mention the lines of progress that it has so far made. It is now nearing its close, and by next month it should have thrashed out and decided upon the many questions which it was called upon to settle. The onus of now making the results of the labors of the Commission profitable to the country is upon the shoulders of the Government, and that the Government has now named Dr. Wang as the head of the department which will be the executive to put the proposals of the Commission into effect, seems to indicate that the high authorities are in earnest in an endeavor to give to the railways the regulated accounting system that they have so long needed. What is now required is, of course, the granting of ample powers and complete authority to Dr. Wang to apply the rules and have proper use made of the forms which the Commission has devised on all the railways in the country. Unless this is done the labors of the Commission will have been in vain. China has, however, so long labored under the stigma of make-believe at reform, has bleached the road of her history with the skeletons of so many fruitless Commissions, has crammed so many cobwebbed pigeon holes with valuable reports, that it is sincerely to be hoped that henceforth the fullest and most comprehensive use may be made of all such carefully prepared reforms as those emanating from the deliberations of the Commission for the Unification of Railway Accounts and Statistics.

THE NEW PHILIPPINES BILL

With the publication of the text of the new Philippines Bill—more popularly known as the Jones Bill—the situation in the Islands may tend to become clarified. The Bill, contrary to anticipation, does not fix any date for the withdrawal of the United States from the Philippines. The withdrawal will take place "as soon as a stable government can be maintained by the Filipinos." As far as this is concerned it is merely a reiteration of a determination announced practically as soon as the sovereignty of the islands passed to the United States.

While the date upon which the Filipinos will attain independence is left unsettled, immensely larger powers are given to the native inhabitants of the Islands. An elective Filipino Assembly and Senate has practically full powers of legislation. The Governor-General is to have the power of veto, but, if vetoed bills are repassed by the legislature with a two-thirds majority, they have to be sent to the President of the United States for approval or disapproval. The franchise is greatly widened by the Bill. As far as can be gathered from the Filipino press the Bill does not meet with entire favor. Stress is laid upon the fact that the day of independence is apparently as far off as ever. On the other hand Governor-General Harrison regards the Bill as a noteworthy step forward. He has given the following expression to his views:—

"The new Jones bill is in direct line with President Wilson's policy as announced upon my arrival in Manila last October. He instructed me then to say 'Every step we take will be taken with a view to the ultimate independence of the islands and as a preparation for that independence.' He took one step then in the appointment of a majority of Filipinos on the commission. The great success of that step justifies another step now.

CHANGES IN THE MINISTRY OF COMMUNICATIONS

In our last issue we mentioned that changes were to be effected in the executive arrangements in the Ministry of Communications. On July 21 a Presidential Order was published appointing the heads of the six departments into which railway and telegraphic affairs have been divided. Previously there were two bureaux—one for railways and one for telegraphs, a Director-General being in charge of each. Mr. Yih Kung-cho who presided over the Railway Bureau, has been made Vice-Minister of Communications, and Mr. Lung , who was Director-General of Telegraphs has been made Taoyin (Circuit Intendant) at Kweiyang, the Capital of Kweichow Province.

The new chiefs of the six departments are—Department of Railway Administration—Mr. Yuan Ling; Department of Railway Construction—Mr. Sheng Chi; Department of Telegraphs—Mr. Chow Wan-peng; Department of General Audit—Mr. Wu Ying-ko; Department of Railway Accounts—Dr. Wang Ching-chun (better known as Dr. C. C. Wang); Department of Telegraphic Accounts—Mr. Tsiang Tseng-wei.

This rearrangement of offices means a division of the labour which has hitherto fallen upon the shoulders of the Directors-General, and should go far to simplify and facilitate work in the Ministry. Of the officials selected for the above posts the *Peking Daily News* has the following to say—

Mr. Yuan Ling is a native of Honan, and at present serves as the Chief of the Store Department of the Tientsin-Pukow Railway. He has considerable experience in connection with railway administration, but his name is not much known to the public. His new appointment is said to have been effected through special recommendation of the President who knows him quite well.

Mr. Sheng Chi is a native of Chihli. At present he is serving as Chief of the Section of railway construction in the Bureau of Railway Administration.

Mr. Chow Wan-peng is a native of Kiangsu and was educated in America. He was the Director of the Telegraph Office in Shanghai during the closing years of the Ching Dynasty, and is a recognised authority on telegraphic matters.

Mr. Wu Ying-k'o is a native of Kiangsu. He at present serves as the Inspector of the Tung-Ching Railway.

Dr. Wang Ching-chun (C. C. Wang) is a native of Lanchou, Chihli Province. At present he is serving as co-director of Peking-Hankow Railway. Since finishing his education in America he has been kept busily employed in various capacities. In all that he has done he has shown thoroughness, diligence and singleness of purpose. As Vice-Chairman of the Commission of the Unification of Accounts and Statistics, which he was chiefly instrumental in forming, he has proved himself a most hardworking official and an earnest conscientious worker. So much confidence has Vice-Minister Yih Kung-cho, who is Chairman of the Commission, in him, that he generally leaves its conferences and its actual work to be done by Dr. Wang.

Mr. Tsiang Tseng-wei is a native of Chekiang and was educated in Japan. He is at present the Chief Secretary of the Bureau of Posts and Communications.

Besides the official changes made in the Ministry of Communications itself, Mr. Liang Tun-yen, the Minister of Communications, also directs his attention to the administrations of all the Government Railways. With the exception of Mr. Li Tsoi-chee, Director of the Peking-Mukden Railway and Mr. Chung Mung-yew, Director of the Shanghai-Nanking Railway, who will be retained in their present posts, all the present Directors of the Government Railways will be removed. It is said that Mr. Yuan Chang-k'un at present Director of Telegraphs in Shanghai will be appointed Director of the Tientsin-Pukow Railway, Mr. Chang Jen-kuang, Director of Peking-Hankow Railway; and Mr. Tseng Kun-hua, co-Director of the Peking-Hankow Railway.

Shortly after Mr. Liang Tung-yen took charge as Minister of Communications, he sent two of his Secretaries to inspect the account books of all the Government Railways. As it is too difficult a task for two men, special arrangements will be made towards securing the services of experts for the work, in order to find out any dishonesty or forgery that might have been committed.

LIAO RIVER IMPROVEMENT WORKS

An interesting development took place early in June in connection with the arrangement made between the Diplomatic Body at Peking and the Chinese Government for a resumption of work upon the Liao River near Newchwang, the Governor of Fengtien Province disregarding the instructions sent him from Peking by dismissing the engineer appointed to carry on the work. The scheme for the improvement of the Liao River has, however, passed through several vicissitudes, and the incident which now draws attention to the situation is merely one of many. Work was actually begun upon the improvement of the river some six years ago, when Mr. W. R. Hughes, who had been engaged upon the construction of Chingwangtao Harbor, and the proposed harbor at Hulutao, was engaged to put into effect the proposals for the betterment of riverine conditions in the vicinity of Newchwang and Yingkow. These commercial ports were becoming seriously affected owing to the increasing volume of water which was finding its way to the sea by a new branch of the river known as the Schuangtaitze, which was formed some twenty years ago. Newchwang and Yingkow were finding themselves high and dry so far as junk traffic was concerned by the growing shallowness of the main stream, and to improve that state of affairs it was decided to build a weir across the Schuangtaitze, which was carrying to the sea more than seventy per cent. of the water of the Liao. At a bend on the river the weir was built, but only in the face of the protest of a large section of the inhabitants of the locality who were worked into a state of agitation by a class of people who found value in the branch as a means of reaching the interior without the knowledge of the Customs authorities who have stations on the main stream. Allegations were constantly being made that the drinking water was being interfered with, and that plea having been overcome by provision having been made for a certain amount of water to pass the weir, it was then alleged by inhabitants up the Liao that the weir was backing up the river to such an extent that floods were caused. One resident of a locality eighty miles distant solemnly averred that he had been flooded out of house and home as a result of the weir. After $100,000 had been spent upon the weir, and when the branch was within fifteen feet of being closed, the people restrained themselves no longer. They attacked the workmen, drove them by force from the site, threw the pile drivers and other material into the Liao, and stole or burnt the timber being used on the work. Progress was thus effectively stopped, nor could the officials persuade the people to allow the work to continue. For two years, therefore, nothing has been done, but the increasing gravity of the situation of Newchwang and Yingkow compelled the merchants and commercial bodies again to take steps to have the vagrant Liao attended to. The result was the arrangement between the Consular body and the Chamber of Commerce at Newchwang for a River Conservancy scheme to be carried out with the aid of a tax upon shipping to deepen the bar, while the work on the upper part of the river was to be done by the Chinese Government. This proposal was placed before the Peking Government by the Diplomatic body and eventually an agreement was arrived at, it being stipulated that Mr. Hughes, who had previously been engaged upon the work, or some other equally competent engineer, should be the engineer-in-chief. The Peking Government thereupon instructed the Governor at Mukden to arrange for the commencement of operations, and his reply was to summon Mr. Hughes to Mukden, where he explained that he had no money for the purpose and believed the best solution of the matter would be to pay off Mr. Hughes, whose original agreement was expiring. Naturally this disregard of instructions from Peking, coupled with his cavalier treatment of the agreement come to with the Diplomatic Body and the claims of Mr. Hughes to consideration, incensed the Diplomatic Body, who lost no time in lodging a strong protest. The result was, however, that Peking adhered to its agreement and again instructed the Governor of Mukden to carry out its orders. Mr. Hughes will, therefore, proceed with his arrangements for a resumption of operations, and the future is upon the knees of the—erstwhile —hostile inhabitants.

THE SHANGHAI-HANGCHOW-NINGPO RAILWAY

NATIONALIZATION OF THE LINES

The nationalization of the railway which is in operation between Shanghai and Hangchow, and which is under construction to Ningpo, is an important development of the Chinese Government's policy of controlling all railways in the country which may form sections of future trunk systems. The line was built by two companies, one operating in Kiangsu province, and the other in Chekiang province; the right of construction being granted to the provincials by an Imperial Edict issued in 1905.

In 1906 construction work was begun, but it proceeded slowly and unsatisfactorily, and in March, 1908, the Government signed an agreement with the British and Chinese Corporation for a loan of £1,500,000 to carry on the work. Opposition was at once raised by the provincials, and renewed efforts were made to raise the money necessary to carry on the construction work. On the plea that the "sovereign rights" of the country were being sacrificed whenever a railway loan was signed with foreign financiers, the agitators managed to have a company formed in Kiangsu and one in Chekiang, and their claims to the right to construct and operate the line were recognised by the Government.

KIANGSU RAILWAY,—Type of Bridges.

The loan agreement with the British and Chinese Corporation could not be cancelled, however, and though an Englishman was nominally Chief Engineer of the line the people resolutely refused even to allow him to walk over the route. The Government was placed in a difficult position, but in an endeavor to make the best of the situation drew up, with the two provincial Companies, a set of regulations whereby they might receive from the Government deposits necessary to build the railway. The situation thus created was the extraordinary one of the Government lending to the Companies money which the Companies objected to the Government receiving from foreigners at one-half per cent. higher interest than it was paying to the British and Chinese Corporation, Limited. The loan money had never been touched, though the Government had from time to time endeavored to persuade the British and Chinese Corporation that it should permit the Government to utilise the funds in other directions. The most persuasive arguments naturally fell upon unresponsive ears, and the Government went on paying five per cent. interest for the loan it could not use for five years, failing in the meantime to effect any satisfactory continuous arrangement with the provincials.

Though the latter built the lines they have never been able competently to manage them. Disputes prevented a junctioning of the two systems for a long time, and construction work proceeded in a desultory fashion. Shareholders in the Company never received any dividends, and owing to extremely bad management a railway which should have paid handsomely annually showed a loss. The Government several times urged the people to hand over their property upon a valuation to the Board of Communications to be managed as a State concern but they would have none of that, and carried on a vigorous campaign in opposition to the proposal of nationalisation of railways made by the Minister of Communications in 1910. The agitation was so great throughout the country that it practically precipitated the revolution. By 1912-13, however, the Kiangsu people realised that they need hope for no return on their investments unless a change were made, and, inspired by a few wise shareholders, consented to a resumption of the property by the Government as the only method of regaining any of their money.

Negotiations went on for some time to effect an arrangement with the Government and at a meeting of shareholders of the Kiangsu Company on April 2, 1913, a resolution was carried approving of nationalisation.

On April 10, therefore, a formal petition was presented to the Government, the Company appointing Mr. Yang Ting-tung, the present Director of the Mining Bureau, to represent them in negotiations with the Ministry of Communications. The result was the preparation of a bill of thirteen articles to be submitted to the Cabinet, the proposal being made that the amount necessary to buy out the shareholders should be drawn from the loan which had so long lain in the Hongkong and Shanghai Bank.

Ultimately the bill was approved by the Cabinet, and the work of taking over the property commenced, Mr. Chung Mung-yew, the Managing Director of the Shanghai-Nanking railway, and Mr. Chang Shih-jen, of the Chinese Telegraph Administration, at Shanghai, proceeding on June 18, 1913, to the head offices of the Company to arrange the auditing of accounts. Seven assistant accountants were employed and the Company was instructed to open new books as from July 1, 1913, but the outbreak of the rebellion caused a suspension of work. At the end of August, 1913, order was restored in the locality, and the work of nationalisation was resumed.

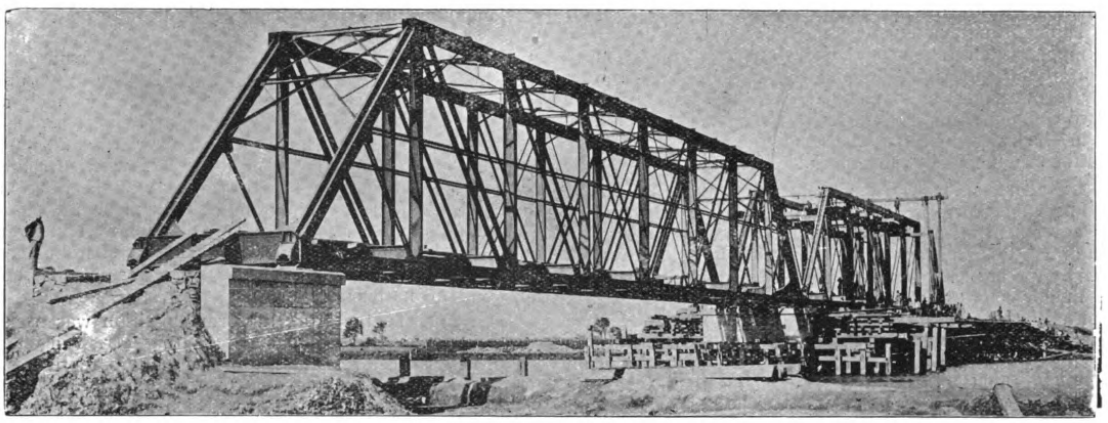
A little difficulty which has to be adjusted in connection with the taking over of the line is concerned with a loan made between the Kiangsu Railway Company and a Japanese firm during the existence of the Revolutionary Government at Nanking. A sum of Yen 3,000,000 was then raised upon the security of the railway itself at an annual interest of 8 per cent., the loan agreement providing that Japanese engineers should be given preference over other foreigners and if further capital were needed the Japanese should have the preference of supplying it. These terms naturally conflict with the loan originally made with the British for the construction of the line, but no doubt an amicable arrangement will be effected whereby the Japanese loan will be repaid and the "rights" secured by it be abrogated.

THE NATIONALISATION AGREEMENT.

The agreement come to between the Government and the Kiangsu Railway Company to effect the nationalisation of the line was as follows:—

An agreement made this twelfth day of the sixth month of the second year of the Republic of China (June 12, 1913) between the Kiangsu Railway Company (hereinafter called "the Company") represented by Mr. Yang Ting-tung (hereinafter called "the representative"), and the Board of Communications (hereinafter called "the Board.")

WHEREAS the Shareholders of the Company are willing to hand over this Railway to the Government; AND WHEREAS at a Shareholders' meeting Mr. Yang Ting-tung was appointed representative with full powers to negotiate with the Board regarding all matters concerning the above Railway; now, therefore, it is agreed as follows:—



KIANGSU RAILWAY.—Bridge over the *Zia*-tang.

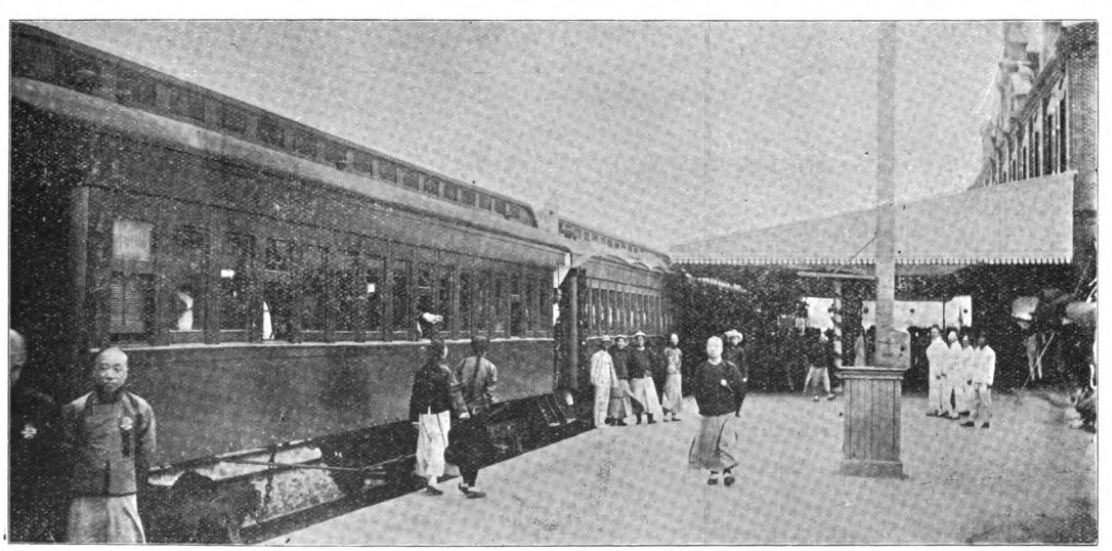
ARTICLE I.—The Company agrees to hand over all the existing line of Railway from Shanghai to Fengching, and all properties and rights belonging to the railway to the Government according to the decision arrived at a Shareholders' meeting. The Railway shall be controlled by the Board direct and all rights formerly belonging to the Railway shall be cancelled.

ARTICLE II.—All the shares of the Company consisting of principal shares valued at $3,476,523, and interest bearing shares valued at $1,073,895, shall be repaid by the Board with Treasury notes within 5 years beginning from the date of taking over of the Railway. Payments shall be made in three equal instalments per year; should the Government be prepared to make payments earlier than the time stated the same can be done upon two months' previous notice.

ARTICLE III.—At the commencement of the date when the Railway is taken over by the Government the Board shall continue to pay interest on the unpaid capital of the shareholders in accordance with the rate originally arranged by the Company. The Solar calendar shall be used in reckoning interest. All interest to be paid at the time when the principal is repaid.

ARTICLE IV.—All Promoters' Shares are hereby cancelled and shall not be recognised as Ordinary Shares, and no repayment of capital or interest thereon shall be made.

ARTICLE V.—The Rules and Regulations for deposits for the Kiangsu-Chekiang Railway drawn up by the Board of Posts and Communications on the 15th day of the 3rd moon of the 34 year of Kuang Hsu of the Ching Dynasty, consisting of 14 Articles shall be considered as null and void, so far as the Kiangsu Railway is concerned.



KIANGSU RAILWAY.—The Station at Shanghai.

ARTICLE VI.—Upon the dissolution of the Company, a special Accounting Office shall be established. The regulations

governing the organisation of the said office shall be drawn up separately.

ARTICLE VII.—All *bona fide* deposits and outstanding debts of the Railway shall be taken over by the Board, but all such shall be limited to the amounts contained in the sixth annual report of the Company.

ARTICLE VIII.—From the time this agreement is signed up to the time the Railway is actually taken over by the Government the Company shall undertake to manage and control all properties, accounts, receipts and disbursements of the Company with the utmost discretion, and shall bear full responsibility.

ARTICLE IX.—All unexpired agreements and contracts relating to employees, transportation, leasing of land, etc., shall continue to be effective if there is no unusual circumstance.

ARTICLE X.—Upon the signing of this agreement the Board shall delegate officials to audit the accounts of the Company. The Company shall instruct the Accountants concerned to make inventories of the property and submit all books, contracts and vouchers to the officials for examination.

ARTICLE XI.—The day for taking over the Railway shall be the 1st day of the 7th month of the second year of the Republic (July 1, 1913.)

ARTICLE XII.—The Board shall not be held responsible for the repayment of all sums not specified in this agreement.

ARTICLE XIII.—All detailed procedure for the carrying out of the above mentioned provisions shall be discussed between the representative and the Board

(Sgd.) Yang Ting-tung,

Representative of Kiangsu Rly. Co., and sealed by the

BOARD OF COMMUNICATIONS.

The Kiangsu Railway

The nationalisation of the Kiangsu Railway and the criticism which have for a long time been levelled against this line lend interest to a statement of the condition of the railway as ascertained upon careful examination by the engineers deputed to make a report for valuation purposes.

It is reported that the alignment of the railway generally is good, the maximum gradient being 1 in 250 but, as only a few short lengths of this have been used, the line is very easy.

KIANGSU RAILWAY.—Station and Offices at Shanghai.

Formation.—In so far as formation is concerned the standard width adopted is 18 feet, and throughout this is well maintained; while in some places there is considerable excess, 23 feet being measured. It is uneven in parts and generally inclined to be low. Good cesses are left along all banks with the exception of the approaches to Bridges Nos. 30 (Peh Yao King) and 31 (Zia Tong). The slopes to 15 feet banks are steep, but are well grown over with vegetation and show no signs of slipping or of undue erosion. The slopes of banks in creek diversions are cut, or have eroded so that they are almost vertical and may slip in, to the detriment of the waterway and the adjoining property.

Little attention appears to have been given to the convenience of water borne traffic in the construction of this Railway. In several cases the line is taken through creeks of considerable width without opening of any description being provided.

Good approach roads to all stations from the nearest town or village are an excellent feature.

Bridgework.—The masonry of bridges generally is of a substantial character.

The steel work is in good condition and is stated to be

KIANGSU RAILWAY.—Sungkiangfu Station.

designed for a load of two tons per lineal foot which would be amply strong for all traffic requirements.

The drawings of bridges said to be completed from actual dimensions show foundations of ample design. Little settlement has so far been noted in any of them.

The water ways provided are inadequate, and further provision is necessary in several places. Even at the major bridges the free flow of water has been considerably impeded by mounds of rough rubble, and constant care must be exercised in noting and preventing erosion.

An additional opening is being made near the Lo Tien Wan bridge consisting of a two 40 feet span bridge. Here again rubble is being put in, considerably reducing the effective water way. Other measures adopted to remedy the inadequacy of the water ways consist of two sets of six 2 feet culvert pipes. This is an expensive and ineffectual method of obtaining the desired result.

Bridges Nos. 43, 45 and 46 give particularly inadequate openings. The tides are very strong here and the water rushes through like a mill race, causing considerable erosion. Divers are periodically employed to investigate and report on the condition of the various river beds but no records appear to be kept of this essential information. Various expedients have been adopted to break the force of the tides, in one case a rubble dam is put through the up stream side of a creek of considerable size. Rubble has been profusely dumped into the streams with the evident intention of preventing erosion.

The steel work of the majority of the bridges is carried on timbers instead of bed stones which necessitates constant renewals.

Fencing and Boundaries.—Fencing is generally of timber, open pale design. The Shanghai yard is fenced with a low bamboo fence. The boundaries are well marked with stones. Throughout the line an adequate width of land appears to have been taken. At Shanghai little provision is made for further development.

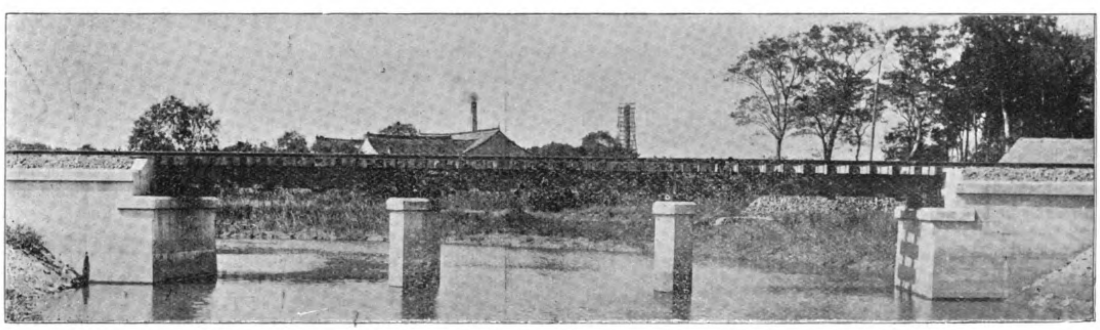
Signs.—The line is measured in "li", and marked with Cast Iron Standards of good design. Gradient posts are of cast iron and good design. "Warning" or "Whistling" notice boards are erected, where required, but the arms are generally too close to passing trains for safety.

Communication.—This is provided throughout by electric telegraph and telephones to all stations. The poles are slight and the wires strained up tightly, with insufficient guys at changes in direction.

Track.—Ballast—The ballast is a hard limestone of good quality. Although generously (even extravagantly) provided along the sides of the line there is not sufficient depth under the sleepers. On the first ten miles there is practically none. The method of piling up the ballast at the ends of the sleepers and the low formation unduly accentuates the amount of ballast and makes it difficult for the permanent way gangs to work. The ballast is very coarse and could be broken up with advantage. There is a large stock of ballast in hand.

Permanent Way.—The sleepers are of three varieties, the names of which were not obtainable. The prices are No. 1. Tls. 1.80; No. 2. Tls. 1.20; No. 3. Tls. 0.93. The major portion are of the No. 3 variety. No records of the life of these sleepers have been kept but it was stated that the No. 1 lasts about two years, the No. 2 about 1 year and the No. 3 is only serviceable for 9 months. The number of sleepers renewed per annum is between 20 to 30 thousand the whole line being practically resleepered every three years. The principal portion of the work of the gangs is therefore the conveyance of, and the renewal of sleepers. Taking this into consideration the running surface of the line is good. A considerable number of sleepers need immediate renewal and longer life might be obtained from even the poorest quality by better road bed drainage. The sleepers taken out are so rotten that they crumble to pieces in the hand, so have long since passed their short period of usefulness in the line. Some new sleepers were examined and found to contain a large proportion of sap wood. The standard size is 8 feet long, 9 inches wide by 6 inches deep. No holes are drilled for the dog spikes, consequently a good deal of splitting, especially with the No. 1 variety, is experienced. Apart from this the difficulty of obtaining correct gangs is materially increased.

Rails.—The rails are 30 feet long, 75 lbs. per yard, rolled at the Hanyang Iron Works. No records are kept of broken rails, but 1% was given as the proportion. A good deal of chipping at the ends of rails was noticed and flaws in the heads were fairly frequent. The presence of some very bad chilled iron wheels on the rolling stock may be accountable for some of this damage.



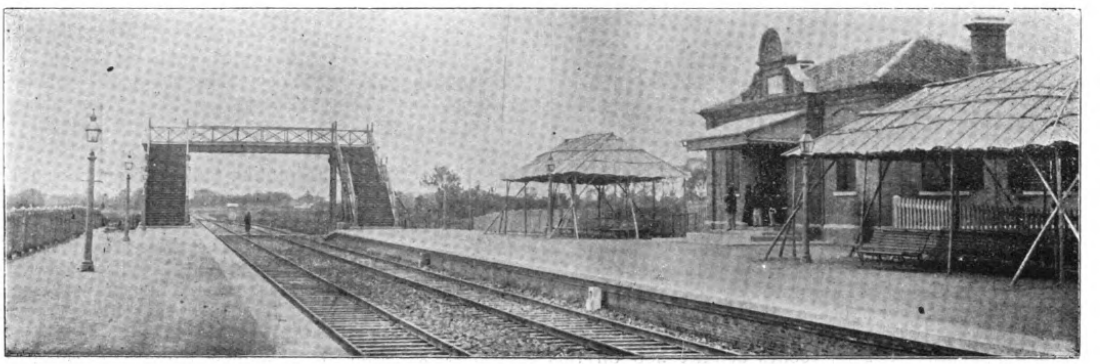
KIANGSU RAILWAY.—Type of Bridge Work.

Fastenings.—Angle fishplates are used with six fish bolt holes. The bottom table is notched for two dog spikes. They appear amply strong for the type of rails adopted. The dog spikes used originally were 5½ inches long by ½ inch square, these were found to be too light and the latest pattern adopted is 6¼ inches long by $\frac{7}{16}$ inch square. The Shanghai Nanking Railway pattern is 5 inches long by ¾ inch square, a much heavier spike. After the passage of a fast train it was noticeable that a large proportion of the spikes were partially drawn.

Points and Crossings.—These have been manufactured locally and are of weak design. The switch tongues are badly chipped. The leads adopted in the main line at loop stations are 1 in 12 facing 1 in 10 tralling. The arrangement, however, is not of special utility as there is no "Up" and "Down" the lines being used indifferently for both ways, governed by the crossing of trains at the various loop stations. All points and crossings are from ¾ inch to 1 inch slack to gauge. The gauging of the main line throughout is faulty. The standard gauge was tested and found to be ¼ inch full, so correct gauge is not possible. This fact is accountable for an excessive amount of wear and tear on permanent way, engines, and rolling stock. The running surface is very fair on tangents, but faulty at curves. The alignment of some curves is not true. The curves generally are

of easy radii with the exceptions already noted. Superelevation is not correctly obtained, on the No. 4 curve it is excessive. On sidings also superelevation is excessive and in most cases superfluous.

Water Supply.—The water supplies at Shanghai, Sungkiang, and Fengching are for locomotive purposes only. Shanghai is supplied by a pulsometer. At the other two stations hand pumps are used. The position of the water tank at Fengching is not satisfactory as it is situated about half a mile outside the station on the main line. A turntable 65 feet diameter is provided at Shanghai and is in excellent order.



KIANGSU RAILWAY.—LUNG-HUA STATION.

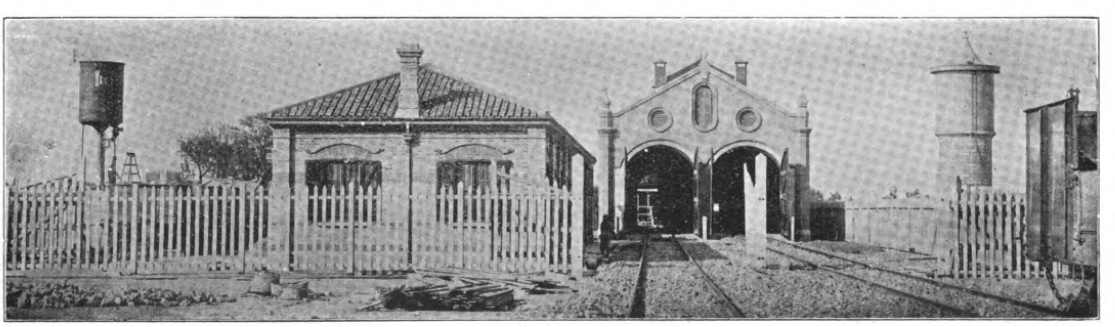
Stations and Buildings.—The buildings throughout are of substantial construction and are generally in good condition. They appear to be adequate, but booking arrangements for passengers in some cases are cramped. The paint used leaves much to be desired. It is of very inferior quality, of local origin, and does not last satisfactorily for twelve months. All platforms are of the high type with brick walls and concrete copings. With the exception of Shanghai Station they are generally too short. The surfacing of platforms is fair. There are passenger shelters at all stations with the exception of Zah Hu Tang. The footbridges at the various stations are substantial design and in fair condition. A good type of crossing gate and house is provided at principal crossings and all are in good order. The staff quarters and gang house are well built, give ample accommodation, and are well maintained.

KIANGSU RAILWAY.—The road bed.

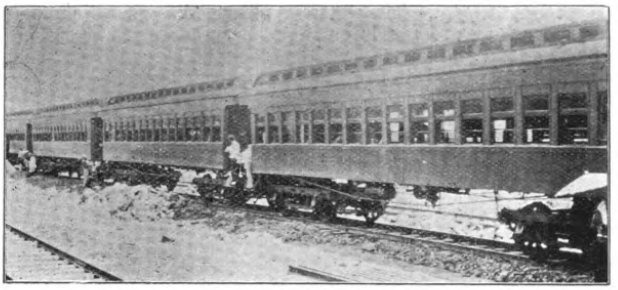
Lighting.—Shanghai Station and offices are electrically lighted from the local supply. Other Stations have oil lamps.

Signals.—Signals are provided at each station, one at either end, 1,000 feet from the points. There is no interlocking so that both signals may be pulled off together. At some stations where the signals are not in use owing to the loop being temporarily disconnected, the arms have not been removed and no provision has been made to indicate this. Drivers therefore continually pass these signals at danger.

Tools.—The permanent way tools are generally in good serviceable condition, each gang being provided with an adequate supply. Every gang has a heavy material trolley but no precautions are taken to secure these when off the line. The average number of beater picks used per annum is 2,000 and shovels are used at the rate of 200 per annum. For a similar length of line on the Shanghai-Nanking Railway 500 beater picks



KIANGSU RAILWAY.—Locomotive Shed and Water Tank at Shanghai.



KIANGSU RAILWAY.—Passenger cars.

and 100 shovels per annum are used. All permanent way gauges tested were found to be incorrect.

Permanent Way Gangs.—There are 3 track foremen; 20 gangs consisting of 1 ganger and 8 coolies; 2 flying gangs 20 coolies each. As a comparison on a similar length of line the Shanghai-Nanking Railway has 95 coolies against 200 on this Railway.

Records and Reports.—Track foremen report once a month to the Engineer in Charge, beyond this there seems to be nothing. No records of any description appear to be kept so that it is not possible to compare costs or draw reliable conclusions for the general control of expenditure and improvement of maintenance.

General.—The line is not in good running condition but with expert supervision it could be improved in due course and the present high expenditure considerably reduced.

Rolling Stock.—The rolling stock consists of eight engines, 36 passenger cars, 2 passenger car underframes, 81 wagons, 1 steam pump with boiler, 2 No. 16 challenge hand pumps, 14 screw Jacks, 1 pit Jack, 1 drilling machine, 1 lathe and 1 trolley.

Coaches.—2 First class coupe passenger cars on 55 feet 6 inches underframes, with seating accommodation for 42 each.

2 First and Second class composite cars on 60 ft. 3 in. underframes, seating accommodation 24 first and 40 second each.

1 second class passenger car on 55 ft. 3 in. underframes, seating accommodation for 58.

2 second class passenger kitchen cars on 55 ft. 0 in. underframes seating accommodation for 40 each.

2 second class passenger cars on 55 ft. 0 in. underframes, accommodation for 68 each.

19 Third class passenger cars with a total seating accommodation of 1804.

3 Fourth or Coolie class cars on 56 ft. 8 in. underframes with seating accommodation for 132 each.

2 Dynamo cars on 37 feet underframes.

1 Mail van on 17 ft. 6 in. underframes.

2 Brake vans on 15 ft. 6 in. underframes.

Wagons.—19 30-ton steel covered goods' wagons on 30 ft. 8 in. × 9 feet. 7 in. underframes.

4 30-ton steel covered goods' wagons on 33 ft. 0 in. × 9 ft. 7 in. underframes.

4 30-ton steel covered goods' wagons on 33 ft. 0 in. × 10 ft. 0 in. underframes.

10 30-ton medium sided wagons on 33 ft. 3 in. × 9 ft. 3 in. underframes.

2 cattle wagons on 33 ft. 0 in. × 10 ft. 0 in. underframes.

2 pig wagons on 33 ft. 0 in. × 10 ft. 0 in. underframes.

Engines.—No. 5 is a small shunting tank engine of the 0-6-0 type British built. Cylinder 13 in. × $19\frac{5}{8}$ in.; diameter of wheels 3 ft. $1\frac{3}{8}$ in.; steam pressure 170 lbs.; grate area 14 sq. ft.; water capacity 660 gallons; coal capacity 1980 lbs.; weight 28 tons;

No. 7 Engine is a shunting tank with an extra tank attached for water, type 0-8-0 German built. Weight 45 tons; diameter of wheels 3 ft. 10 in.

Nos. 1, 2 and 3 goods' engines, these are American built and of the 2-6-0 type. Cylinder 20 in. × 26 in.; diameter of driving wheels 5 ft. 4 in.; wheel base 22 ft. 6 in.; steam pressure 180 lbs.; water capacity 5,000 gallons; coal capacity 6 tons; weight of engine and tender 110 tons.

Nos. 6, 8 and 9. passenger engines, German built of the 4-4-0 type. Cylinder $16\frac{1}{16}$ in. × $23\frac{5}{8}$ in.; diameter of driving wheels 5 ft. $8\frac{29}{32}$ in.; wheel base 24 ft. $3\frac{11}{32}$ in.; steam pressure 168 lbs.; weight 85 tons.

All the passenger coaches (excepting the two brake vans and mail van) are fitted with the Westinghouse Brake, electric light and oil lamps; electric light is obtained from the two dynamo cars, these being fitted with a dynamo slung underneath and run off the axle. One car has 19 batteries and the other 17.

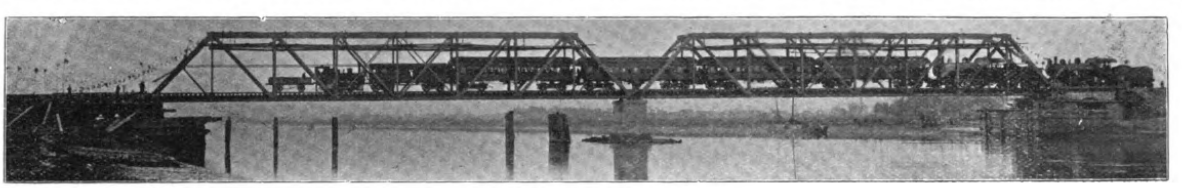
As there are only two dynamo cars, the fast and express trains are the only ones that can be lit electrically.

The goods' wagons are fitted with hand brakes only, a number of these, however, are out of order.

Practically the whole of the engines and carriages and a number of wagons require thoroughly overhauling.

The passenger and tank engines are suitable for the work they have to perform but the goods engines are far too heavy for the weight of the rails, and much too expensive to run economically the service they are on.

The engines are burning on an average, 128 lbs. of coal per mile.

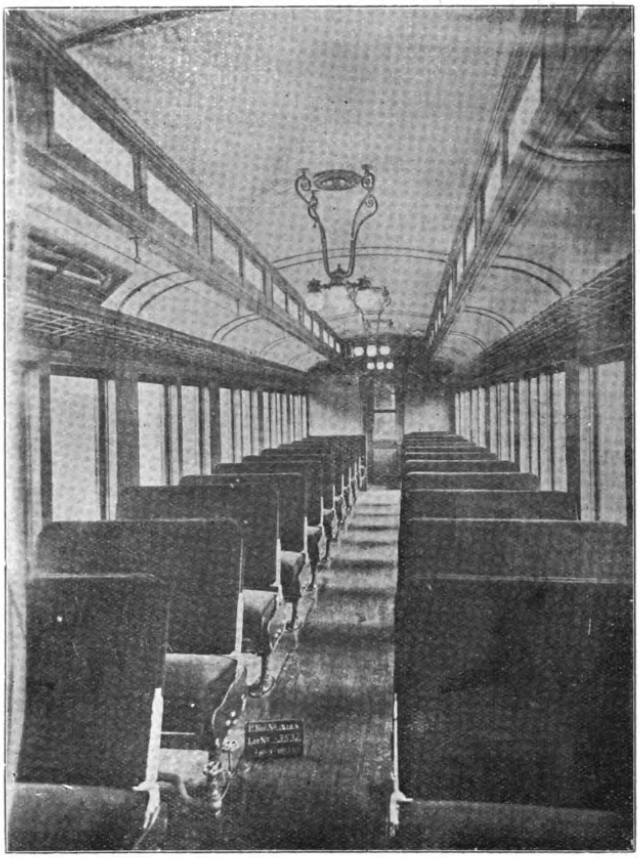


KIANGSU RAILWAY.—Zia-tang Bridge.

KIANGSU RAILWAY.—A typical station.

The Chekiang Railway

The vicissitudes which attended the operations of most Chinese privately owned railways also fell to the lot of the Chekiang Railway Company. It was organized with a capital of $5,000,000 to build and construct the line from Fengching to Hangchow, in circumstances similar to those attending the organization of the Kiangsu Railway Company. In June, 1908, in order to provide funds for the extension to Ningpo and the construction of the Chien Tang bridge at Hangchow, an increase of capital of $15,000,000 was authorized, to be paid in 5 yearly instalments. Only Chinese were permitted to subscribe or hold stock and the number of shareholders was reported to be over 53,000, about 40,000 of whom were coolies, farmers and small tradesmen, some holding as low as $5.00 in shares. The first call on the new issue of $3,000,000 was reported to have been paid in.

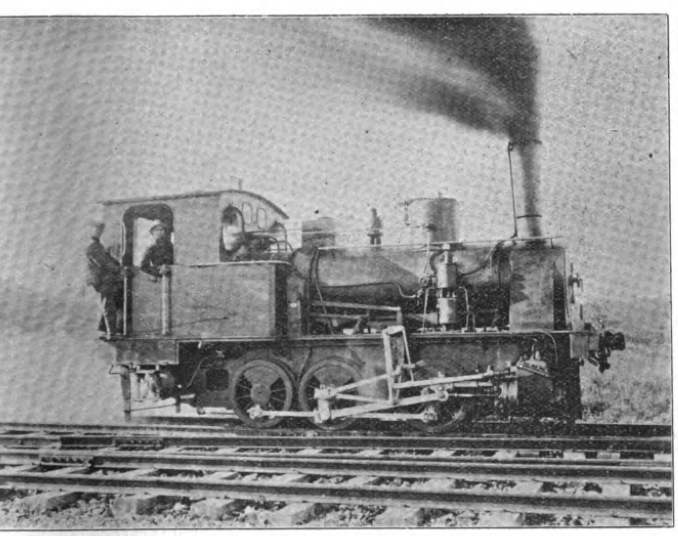


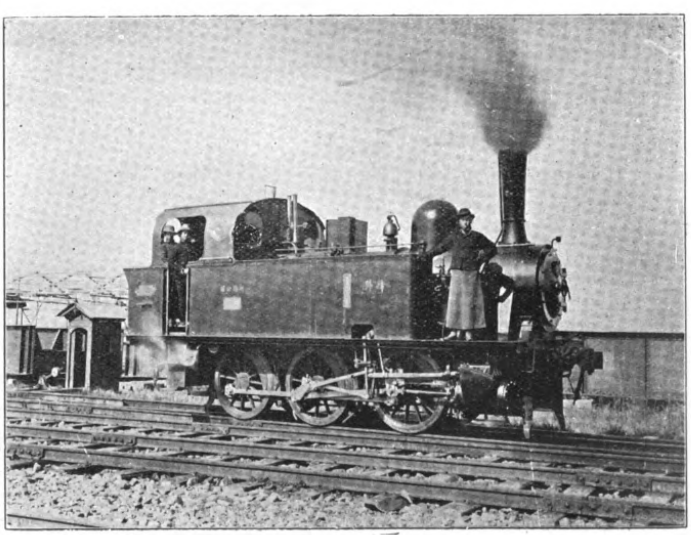
CHEKIANG RAILWAY.—First Class Passenger Coach.

Up to the completion of the two roads, both companies had ample funds at their disposal without recourse to the British loan to carry out all their work and purchase all materials. Of the $1,500,000 loan, the Board of Communications allotted a certain sum to the two companies at 5½% interest, charging 7% of the amount as premium. Although the loan provided for the employment of a British engineer and the purchasing of the materials through the British and Chinese Corporations the Chekiang Railway Co. declined to avail themselves of the purchasing agents' services and in consequence has had to pay the sum of $250,000 Mex. in lieu of the 5% commission stipulated in the Loan agreement.

The Chekiang Company, not needing its share of the British Loan, loaned the money to Chinese Banks at a higher rate of interest than that exacted from them by the Yuchuanpu (Board of Communications). The actual cost of the Fengching to Hangchow line was $43,000, Mex. per mile including cost of earthwork, tracks, stations and all charges. The branch line from Zah Kow to Hengleng Chiao cost $79,200 Mex. per mile, exclusive of rolling stock. It has 8 major bridges with spans over 40 feet; 111 minor bridges with spans from 10 to 30 feet. The waterway opening per mile is only 22 feet. The country traversed by both the Chekiang and Kiangsu Railways is a net work of canals and waterways the natural highways of commerce and trade in this low lying section. The closing or narrowing of those streams by cofferdams to the detriment of the great junk and river traffic was prohibited by the authorities so in many instances the railway engineer put into practice the old scheme of building one abutment at the water's edge, the other on dry land to one side, and then after completion, the shallow canal was diverted from its old channel to the new ones between the abutments. The line is practically on the surface throughout, and the cost per mile should have been much less than it was.

The ties on both lines which were purchased in Japan, are of standard sizes 8 ft. × 8" × 6" spaced 2 ft. 4 in. between





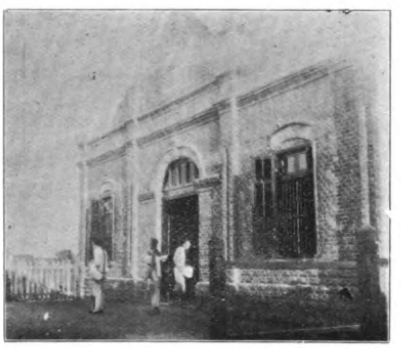
CHEKIANG RAILWAY.—German "Borsig" Locomotives.

centers. They cost delivered No. 1 Tls. 1.80; No. 2 Tls. 120 and No. 3 Tls. 0.93. Many had to be renewed after one year's service. The ballast is limestone and sandstone secured from quarries near Hangchow with rail connections with the main line. There is no ballast under the road on the Fengching section. The cost delivered at the track was about 60 cents Mexican or 25 cents per cubic yard.

The entire line from Shanghai to Hangchow is 116 miles long. The Chekiang section has in addition 36 miles of sidings. The line is single track, standard gauge and the rails of 75 lbs. to the yard, of Standard Section, 10 meters long, laid with even joints. These were manufactured at the Hanyang Iron & Steel Works, opposite Hankow.

The Chekiang Railway has 15 depots and the Kiangsu line 10.

On the Chekiang Railway there are no grades of more than 2-10 of 1%, and no curves of more than 3 degrees: labor is the cheapest in the world, and there is only about $2,200,000 gold invested in the property. At the outset, the passenger receipts alone between Kashing and Hangchow, a distance of 60 miles, averaged $3,000 Mexican per diem.



CHEKIANG RAILWAY.—Third Class Station.

It has been mentioned elsewhere that considerable difficulty was experienced in persuading the proprietors of the Chekiang Railway that their real interests lay in agreeing to the taking over of the line by the Ministry. Local pride and prejudice generated considerable opposition against the proposal and at meetings of shareholders great heat was shown. Gradually, however, wise counsels prevailed and on March 1, 1914, the Company shareholders met at Hangchow and agreed by 9,757 votes to 1,428 votes to sell out their shares to the Government. The acquirement of the Kiangsu section of the railway by the Government made the sale of the Chekiang section inevitable, but it was not until a considerable amount of ill-feeling had been displayed that the resumption by the Government was agreed to. Since then active investigations have been made to determine an equitable figure at which the line should be taken over. This has been a task presenting many difficulties. The system of keeping accounts left much to be desired, and perhaps no better proof of the imperative necessary of uniformity in keeping railway accounts could be found than the state of things which exists on this line. Gradually, however, matters are being straightened out and it is hoped that shortly the formal transfer of the line will take place. Probably the amount eventually paid to the Chekiang Railway Company will be in the neighbourhood of nine and a half million dollars. It has to be remembered that the Chekiang Railway includes the portion from Ningpo the Tsao Ngo River and that 70 miles has to be completed.

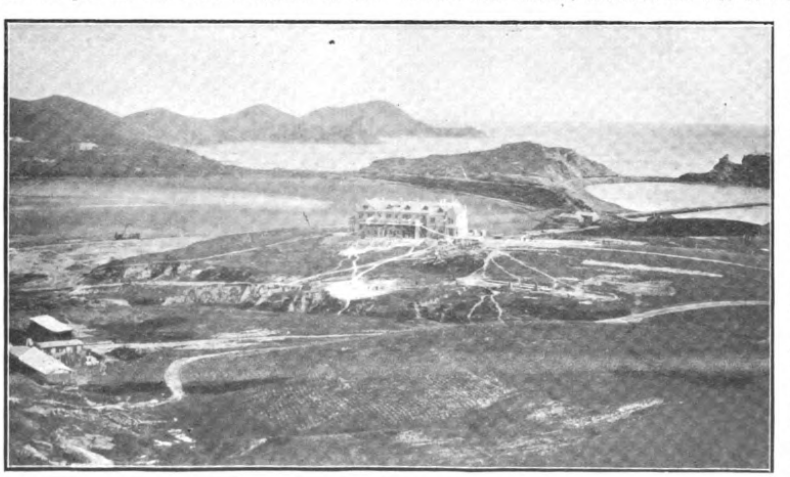
It is understood that considerable expenditure will be required to bring the line into a safe and sound condition. In many respects it has been neglected and work which would have cost comparatively little if done in time will have to be carried out at a greatly increased cost. This, however, is a minor consideration. The really important thing is that at last the line is to pass under the control of the Central Government, and there is every reason to believe that it will henceforward be a valuable addition to the communications of the country.

HULUTAO AS A CHINESE PORT

DESCRIPTION OF THE HARBOR IMPROVEMENT PROJECT

The steps which are now being taken by the Chinese Government to open Hulutao and other centres in North China to foreign trade draw particular attention to the natural advantages and possibilities of Hulutao as a harbor for the accommodation of ocean going steamers and a shipping centre for a rich and extensive hinterland.

Hulutao is situated on the coast about 110 miles north of Chingwantao, and is connected by a branch line with the Peking-Moukden railway at Lienshan, which station is some seven and a half miles distant. It is 31 miles from Chinchow, and, taking Moukden as a centre the distance to Hulutao is 184.16 miles, while the present line from Moukden to the seaport of Dalny is 246.7 miles, an advantage in favor of Hulutao of 62½ miles shorter for freighting purposes, and correspondingly an increased advantage for every point from Moukden to Lienshan. Hsinminfu is 37 miles from Moukden or 147 miles from Hulutao, and 283 miles from Dalny, so that cargo going to Hulutao from Hsinminfu district would have 136 miles shorter distance to be carried in order to reach the sea for shipment than if it went via Dalny. The distance from Moukden to Chinwangtao is 30 miles further than from Moukden to Dalny. The distance from Moukden to Yinkow by the South Manchurian Railway is 112 miles, or 72 miles nearer than to Hulutao, but the distance by the Chinese railway is only 20 miles nearer. Yingkow, however, has the disadvantage of being frozen four months in the year, from November to March, so that no ships can enter during that period, and it is then useless as a port. The distance from Hulutao to Taonanfu is about 290 miles, but this section of the country abounds in coal mines of excellent quality notably at Peipiao, 55 miles distant, and at Tayaokou, 70 miles. Hsinhiu, near Hsinminfu, has also excellent mines, and no doubt they will eventually be opened by modern methods and will bring much traffic to Hulutao. The development of local traffic when the Taonanfu railway is built with suitable branches will also be considerable, for, no doubt, it will be followed by the settlement of all available parts of the country it passes through and will bring great quantities of cereal and mineral products within reach of shipment by sea via Hulutao. Any railway construction and consequent development of mines or agriculture to the north and west of Hulutao must create enormous traffic for shipment at Hulutao for it is the natural outlet by sea from Manchuria and Inner Mongolia.



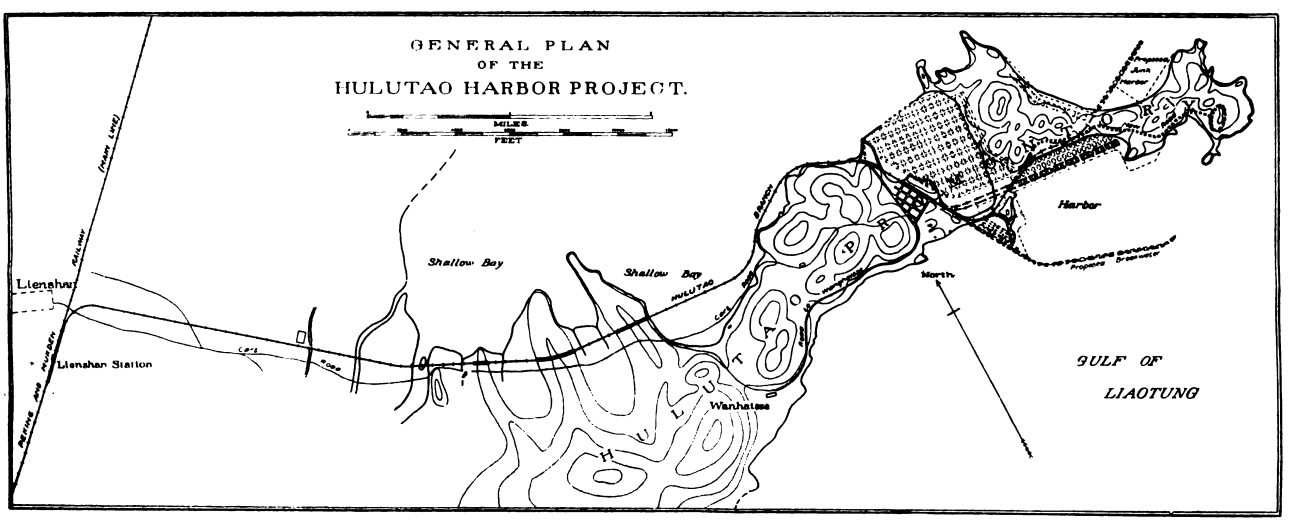
HULUTAO.—General View of the Harbor.

As well as being favorably situated as a seaport Hulutao has the advantage of a good natural depth of water giving 30 feet at low tide, where the end berths of the projected breakwater will be situated if the project which has been devised is carried out by the Chinese Government.

The water rises 8 feet to 10 feet at spring tides and it will be easy of access from the sea for shipping at all times. As regards ice conditions it is also favorably situated considering its position in the Gulf of Liaotung, for the ice on the south side never forms all over the bay till late in the season and then only for ten days or so, but not of sufficient thickness safely to support the weight of a man. The strong tidal current and deeper water at Hulutao, together with the considerable rise of tide, seems to bring about a condition which is unfavorable to its freezing very thickly, though abnormal winters might cause a freezing for at most a month. Observations, however, show that it is no unusual condition for perfectly open water to be at Hulutao or the neighborhood when ice is six inches thick at Chinwangtao.

Hulutao has not only all the requisits for making a good harbor, but also is beautifully situated for a summer resort, and although this is of little importance as regards the harbor, yet it is an advantage from the point of view of its value as a property, for no other seaside place in the north of China is so attractive as regards scenery, and it will no doubt become a popular resort when its advantages in this respect are realized. The money that is annually expended by visitors and property owners at seaside resorts amounts to a very considerable sum, which adds to the value of the land and is of great importance to the neighboring villages for many miles around, as is instanced at Peitaiho. One of the advantages of Hulutao would be that the railway goes right down to the sea instead of stopping six or seven miles away as at Shanhaikwan or Peitaiho.

Hulutao is a narrow promontory running out into the sea in a direction roughly speaking from west to east at right angles to the coast line, its western extremity joining the main land and its eastern end projecting two miles further into the sea. It is covered with numerous



round hills, the highest being 400 feet in altitude. It takes its name, Gourd Island, from a fancied resemblance to the shape of a gourd—or Hulu.

On the northern side the water is shallow, but sheltered from the strong southerly winds of summer by the hills. On the south side of the promontory the water is deep with a uniform mud bottom. It is exposed, however, to the full force of the summer winds, but is sheltered from the north, the direction of the prevailing winter winds. It is here in the south side of the promontory that the harbor should be located for, with a breakwater to shelter it from the rough winds and seas, large vessels could lie alongside the wharves in perfect calm. On the north side of the promontory where the sea is always calm accommodation could be made for smaller vessels and junks.

With all the advantages which Hulutao presents, and considering the dearth of essentially Chinese ports on the coast of China, it is a matter for great surprise that the Government does not apply itself in earnest to the not difficult or over-expensive task of making Hulutao the chief port in the north. Already much work has been done, but for some inexplicable reason the Government appears to prefer to allow that to go for nought rather than continue it and so secure one excellent harbor of its own from which could be handled the great trade possibilities of the wealthy region for which it should be the outlet.

In August of 1908 a project to create an adequate harbour at Hulutao was seriously considered, the then Governor of the Province instructing Mr. W. R. Hughes, M. Inst. C. E., who was connected with the building of Chinwangtao harbor, to make an examination of the coast from Yingkow to Shanhaikwan with the object of finding, if possible, a suitable place for a harbor for the accommodation of the Manchurian and part of the Mongolian trade. Hulutao was brought to the attention of Mr. Hughes as a likely place, which, among others had been visited by a Customs cruiser in 1906 and a rough chart then made of it, and after an examination of the coast he reported, in September, 1908, that Hulutao appeared to be the most suitable, if not the only fit place for a harbor, both from its natural conditions and its situation as regards the trade of a large part of the province of Fengtien and that of the undeveloped portion of Mongolia between it and Taonanfu.

The report was favorably considered by the Governor of the province, who also decided to adopt the project made for the improvement of the port, and an order was given to proceed with the scheme in the early part of October, 1910, but by October 15 of the following year they were suspended on account of the outbreak of the revolution, owing to the lack of funds.

Mr. Hughes advocated (1) that a branch railway should be built to connect Hulutao with Lienshan station on the Peking-Moukden line, as a first step.

2. That a breakwater should be built to provide shelter from the southerly winds, to be so constructed that it would serve also as a wharf for the berthing of ships; to be made vertical on both sides so that in the event of the water freezing at any time inside the harbor ships could still come on the outside; the length to be 5,400 feet long, with a width of 100 feet to provide for the railway running to the extreme end, and to have a depth of 30 feet of water alongside for three berths of ships of 10,000 tons or over, and a total berthing accommodation for 14 ships.

3. The railway line to be continued the whole length of the breakwater with sidings to the different berths, the goods being deposited in godowns on shore, or made up in train loads for their destination as discharged.

4. The erection of a railway station at Hulutao, as well as store houses, engine sheds, and necessary houses and offices for people employed on the work.

5. A building for an hotel to be erected to provide accommodation from the beginning of work for the convenience of travellers, people entering upon businesses at the port, employees of the harbour works, or the convenience of officials visiting the place, for all of whom there might be no other accommodation.

6. The erection of coolie barracks of a permanent nature for the use of workmen and afterwards for cargo coolies working in the harbor.

7. The building of roads connecting Wanghaisze with Hulutao and for access to the promontory.

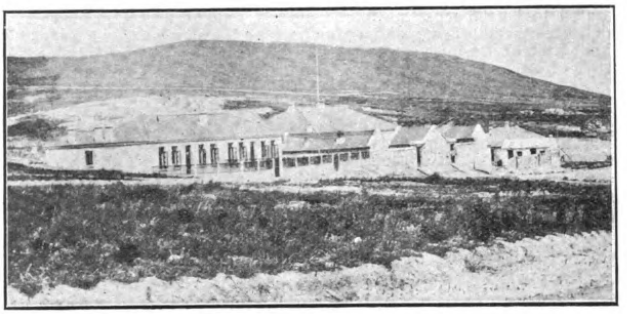
8. The reclamation by an embankment across a mud flat of a large area of land which would admit of streets and roads being laid out upon it and the high land to the west.

The estimate for the breakwater and railway was $4,514,920, and the buildings were sanctioned from time to time as necessity arose, but were not included in that amount.

Actually, only one year's work was carried out, but during that time considerable progress was made. A cart road from the Peking-Moukden railway to Hulutao was repaired at the outset, and the railway from Lienshan to Hulutao was then undertaken. The difficulties of making a railway in any direction to the harbor appeared at first sight to be formidable, owing to the hilly nature of the coast and its deeply indented bays, but a feasible way was finally decided upon by cutting across an arm of the sea for a distance of 4,000 feet and then closely following the coast line.

The railway as now constructed is of standard gauge like the Chinese Government Railways and is laid with 60 lbs. rails.

It leaves Lienshan on the East of the station, starting with an embankment 18 feet high which the Peking-Moukden railway have raised for a station, yard in connection with Hulutao, with space for five lines of sidings and a turntable. It then curves to the southwards with a curve of 1,500 feet radius and runs through flat country with embankments about eight feet high crossing two rivers 110 and 180 feet wide on temporary



HULUTAO.—Employees' Houses.

bridges of Oregon pine timber. The culverts are built of rubble in cement mortar with concrete arches.

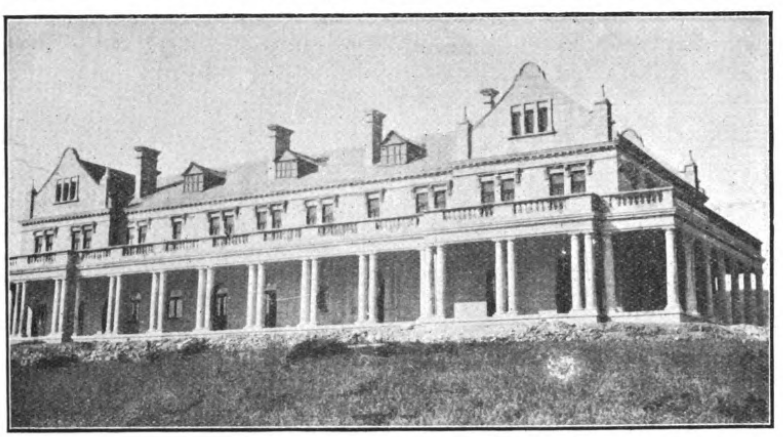
At 20,000 feet from Lienshan there is a cutting 1,200 feet long and 34 feet deep at its deepest part. It is through rock of varying hardness, but most of it of a soft description.

After another 2,200 feet of low embankment there is another rock cutting 1,100 feet in length, by 28 feet deep. After this there is a stone embankment 15 feet high and 4,000 feet long crossing an arm of the sea, and for 6,500 feet more a stone embankment through the edge of the sea curving along the coast, till at 35,300 feet from Lienshan a cutting 40 feet deep and 720 feet long is met with. This is for the most part through extremely hard quartzite which caused much labour to work through.

Beyond this cutting, in the direction of Hulutao there is another stone embankment 900 feet long and 19 feet high and then a final cutting 1,430 feet long and 32 feet deep which is also through hard rock.

Hulutao station site is reached at 7½ miles from Lienshan, where there is a platform some 500 feet long 1,500 feet from the shore end of the breakwater.

The steepest gradient rises 1 foot in 100 for a short distance and this could have been reduced very much but it did not seem worth the expense in view of the steeper gradient on the Peking-Moukden line between Ning-Yuen-Chow and Kao-Chiao. The sharpest curve is 1,000 feet radius.



HULUTAO.—Front View of the Hotel.

The two bridges will sooner or later have to be replaced by steel girders and the ballast requires to be broken up to a smaller size—otherwise the line is complete excepting the station house and yard at Hulutao.

The rolling stock consists of two small engines of 15 tons weight each and one of 30 tons, besides 24 ballast wagons of 15 tons each, and a railway carriage for first and second class passengers. These are only intended for the purposes of construction.

At Hulutao there has also been built a temporary engine house, a store house for machinery, etc., and a small general store besides a small blacksmith's workshop and a cement store.

The sea wall along the shore between the end of the breakwater and the rocky coast line is for reclaiming land required for office buildings and workshops and as a protection to the end of the railway line itself as it approaches the breakwater. It makes a final and secure connection between it and the rocks forming the main land. There being so little level land at Hulutao advantage has been taken of every opportunity for reclamation in laying out the works.

The wall is founded on rock or on concrete blocks sunk eight feet into the beach below low tide. A part of it received some damage from being left unfinished when the works were first suspended, but it has since been made secure and the defects will not be apparent when the work is complete.

These blocks are 30 feet long and contain each of them 100 tons of concrete made with Tangshan Cement. The wall where finished is 18 feet high, and 580 feet of it is in various stages of completion. The upper part is made as a hollow subway 4 feet 6 inches wide and 6 feet high to give convenience for fixing water pipes, electric light wires, etc., which will subsequently be required. Some 180 feet of this subway is made to finished level. Though this wall is at an angle with the general direction of the breakwater it should really be considered as part of it as it is continuous with it and the construction is the same, but is subject to even rougher seas.

The first part of the breakwater now under construction has a length of 930 feet, 350 feet of it being sixteen feet high, 350 feet ten feet high, and the remainder five to six feet high.

It is built over a reef of rocks running outwards from the shore and is composed of concrete blocks of about 100 tons weight each, built in place and keyed together at the ends. In this and the sea wall just considered there is a total length of 1,530 feet and a total number of 117 such blocks which had nearly all to be built at low tide.

The north winds in the spring and early winter make these seasons the most favourable for this part of the work as the summer winds hold up the tide waters, and the rocks are then seldom uncovered, causing rougher seas to prevail. This part of the work has been necessarily slow in comparison with that on shore in buildings, etc., on account of the difficulty in transporting cement from Lienshan before the railway was built. The breakwater requiring a very large quantity of cement as compared with the other work had to wait till the railway was complete, cement for other purposes being brought down on donkeys' backs.

When work was commenced at Hulutao there was no place convenient to the works, on which to put buildings; the level ground was all on high hills or on a mud flat covered by the tide so that it had to be reclaimed from the sea at first by rock excavation and filling in order to get space for a small workshop and cement store near the breakwater. But since then a wider embankment 400 feet wide and 1,100 feet long has been made by filling in, so as to have working space on shore for present purposes, and it will be permanently required for the station yard, sidings, etc.

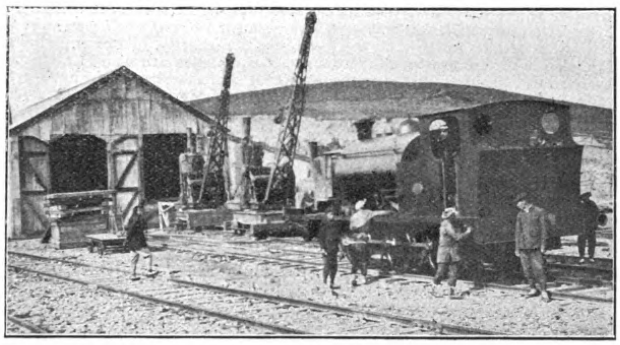
An embankment was commenced across the mud flat in order to reclaim it from the sea. The embankment when finished will be 2,500 feet long and 15 feet high by ten feet wide on top. 1,248 feet of it had been completed when the work was ordered to be stopped on account of the Revolution.

The object of the embankment is to exclude the tide from the mud flat and thus reclaim the land from the sea, when comparatively little filling will be required in order to make it suitable for building on. Approximately 2,000 mow will be reclaimed in this way and rather more than half the embankment required had been made when the work was suspended.

The land surrounding Wanghaisze village and that lying between it and Hulutao having been purchased by the Government for the purposes of Hulutao Harbor it was considered essential to build a road between the two places on account of future development, as well as an alternative route to Lienshan. Without it the land was useless and almost inaccessible, and no use could be made of Wanghaisze village as living room for some of the workmen engaged at Hulutao. A good graded road has therefore been made, 20 feet wide in the centre portion which is finished and can be extended to 40 feet when required. It skirts the base of the hills for a distance of three miles from the coolie quarters at Hulutao to Wanghaisze village. Its picturesque situation will give sites for many private residences in the future and it is in itself an attractive feature of the port.

The land round Wanghaisze is suitable for bean mills or factories, which will, no doubt, be established in due course and a siding about a mile in length would join it to the Hulutao branch railway and so give it all the advantages of the port.

HULUTAO.—Coolies' quarters on left and Employees' Houses on right.



HULUTAO.—Temporary Engine Shed and 30 ton engine.

As well as the road to Wanghaisze a pathway ten feet wide has been made along the face of the hills forming the promontory so as to give access to its whole length of two miles.

At first it was very difficult to walk along the promontory at all owing to the steep sides of the hills, and since tree planting was contemplated a pathway was a necessity. It has given access to many valuable sites for building lots in future.

The subject of water supply even for temporary purposes early forced itself on attention, and wells were sunk in several places, without very satisfactory results. It was soon found necessary to build storage reservoirs for rain water as the wells were insufficient. A large amount of fresh water was required for daily use of the workmen besides what will be required for the various steam engines when the works are fully developed.

The permanent water supply for the town of Hulutao will no doubt have to be brought from the Lienshan River some three miles away, but this will cost a considerable sum of money and take some time to carry out. For present need, therefore, it was decided to build in the first place a small masonry dam across a ravine on the Wanghaisze road for impounding rain water, and, with a suitable filter bed, get a supply for the workshops and offices and a water tank for the engines near to the breakwater. A tank 100 feet square and 20 feet deep has been thus made, but it is necessary to line it with concrete to prevent escape of water through the stratifications of the rocks.

Besides the tank just described a larger reservoir is in construction to the nort-west of Hulutao to give water for general use at that end of the town. The bank is over 30 feet high and 446 feet long, and was nearly completed when the order was received for suspension of all work as explained.

As a large quantity of stone will be required for filling the breakwater and other embankments, it was necessary to prepare in time by making a railway siding along the face of the cliffs which were then only accessible at low tide. Accordingly the face of a small hill has been stripped on two sides, one for 1,000 feet long and 100 feet high, and the other 1,000 feet long and 25 feet high, and railway lines have been laid on each face so that the work of filling will go on quickly when the breakwater is sufficiently advanced to require it.

By the same operation level ground is being made for other parts of the project. As this work of preparation is tedious in itself and the rock could not be obtained without it, there was a distinct advantage to be gained by doing it while the initial stages of the work were in progress.

This has required a great amount of labour, as an embankment 1,500 feet long and 200 feet wide had to be made averaging 13 feet high, and a ravine on the west of it widened from 200 feet to 1,000 feet in order to get material to build it with, and to make space for surrounding buildings. As most of this entailed rock excavation, an idea can be formed of the amount of labour required.

One of the first things done on the work was to build temporary offices and stores, and accommodation for men injured, for the direction of all this work required a great deal of account keeping, drawing and other office work, and room had also to be provided where men injured by accidents could be nursed to recovery. Unfortunately owing to the large number of men employed there were many such cases owing to falling rock and earth, but they received careful treatment.

A store room also had to be built of an entirely temporary description as, till the embankments are completed, there is no convenient site at breakwater level. A small godown to hold 3,000 bags of cement was also built.

A small blacksmiths' shop was built where quarry drills and tools could be made and repaired. This building was made for three gangs of blacksmiths, besides fitters on roof iron work.

The construction of various permanent buildings was also undertaken and in making these, the principle kept in view has been to make them of a thoroughly substantial character so that they may be valuable property for all time and of a good architectural appearance. Owing to the scarcity and high price of bricks and difficulties of transport it was decided to make all buildings of hollow concrete blocks with Tangshan cement and the shingle and sand from the sea shore. This was found to be cheaper than brickwork here, and admitted of handsomer and more durable buildings being erected.

The coolie barracks were built of rubble stone and lime with galvanized iron roofs, and were in three buildings 180 feet long and 30 feet wide with berths in two tiers. They will accommodate 850 men with ease and a good many more by crowding. They are built with a view to disinfecting in case of epidemic. Steam was found to be the most economical for heating as the brick kangs generally in use are by no means cheap to construct on a large scale, require constant renewal, and are costly to heat.

The buildings for Engineer's Office, the Chinese Officials' Office and Residence, and the Engineer's Residence are of two stories of concrete block construction and are of a handsome appearance. They are well built buildings of a permanent character in keeping with those which it is hoped the town will be composed of.

HULUTAO.—The Engineer's Office.

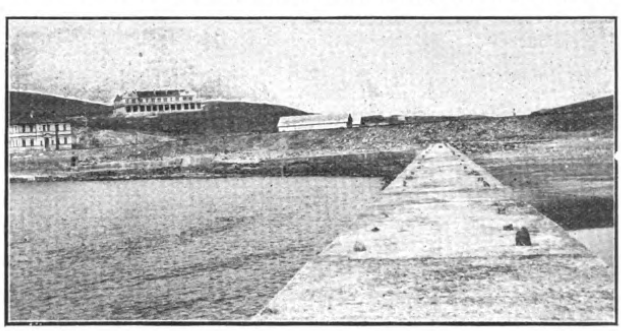
Eight houses for Chinese clerks and others to be employed on the works have been built, six of them in rubble stone and two of concrete blocks and they are model dwellings of their kinds.

A building for a hotel or Rest House has also been erected. It is of concrete block construction, contains 20 bed rooms besides 10 bath rooms and lavatory as well as a large dining room, billiard and bar room, reading room, ladies drawing room and private dining room. It has a verandah on the front and north sides and is fitted throughout with steam heating and properly arranged bath room and water fittings. It remains only to be decorated and furnished, and water laid on from the reservoir, when completed, in order to be fit for occupation. It will be very much required as a stopping place for passing travellers, and a living place for some of the employees of the harbour, and will be indispensable when steamers begin to come to the port. Even as a summer resort for people coming to stay by the sea, it should be profitable to put it in working order at once.

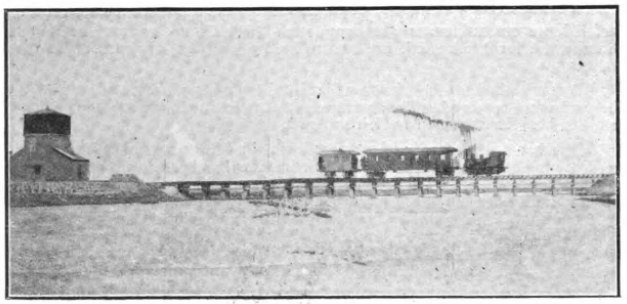
A line of 37 small concrete houses of one room each have been built for use as small shops or for pedlars, etc., as living rooms, in order to be able to keep such places in a sanitary condition and do away as much as possible with the unhealthy huts of mud and kaoliang stalks.

There have also been built of concrete five larger houses to be used as shops. Mr. Chas. Thunder was the architect for all the buildings.

A commencement has been made with the laying out of streets on the high ground to the west of the mud flat. Owing to the hilly and broken nature of the ground and the rock met with close to the surface, it requires much labor to get this into condition for building lots of a town site.



HULUTAO.—View of the Hotel and Engineer's Office from the Breakwater.



HULUTAO.—Water Tank and Railway Bridge.

But with a little more work expended upon it, four very good streets will be available for the purpose.

A large quantity of young trees were planted, by the Forestry Department of Moukden, over the slopes along the Wanghaisze Road, on the promontory and along the railway line, but owing to the want of shelter from the winds they are not growing well except in a plantation on the north of the promontory.

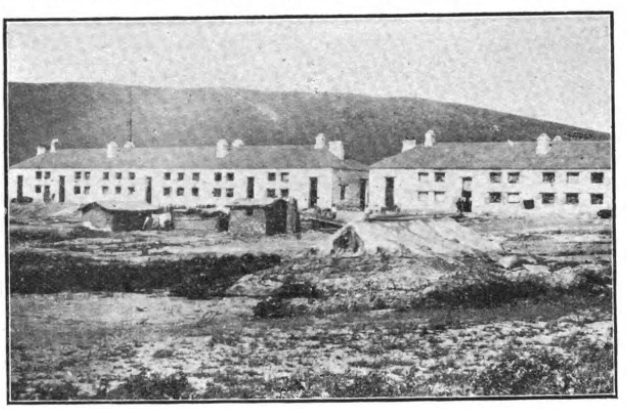
Some machinery was bought in Hongkong which had been used in the dockworks there including two steam cranes, two stone breakers and a concrete mixer, besides two portable engines for working them. They are all in good order and stored under cover at Hulutao. Also a locomotive, a workshop engine and boiler, a lathe, planing machine, drilling machine and other small tools were imported from England.

A telegraph line to Lienshan station and a telephone line along the railway is also in working order as both are necessary to the proper working of the railway.

A rest house consisting of six small rooms in a compound has been built at Lienshan station where visitors may stay when waiting for the train from Hulutao. The telephone is also connected with it.

At Hulutao, near the Chinese Officials' house, police barracks have been built capable of accommodating 40 soldiers or police, with quarters for their officers and stabling for six horses.

The execution of the works enumerated above naturally necessitated a great deal of temporary work which it would be tedious to mention. Suffice it is to say that when the works were commenced here, a distance of ten miles by road from the railway station, there were no resources of any kind, not even fresh water, or huts that coolies could live in, and that in the year's work now under review the railway was made and that through somewhat difficult country, a good commencement was made to the breakwater, many permanent buildings were made that would be no discredit to any town, much embankment and reclamation work was done out of hard rock, quarries have been opened and much other work done which will greatly facilitate the completion of all the rest of the scheme. In a word, the preliminaries of the work of a great part have been done under difficulties, and all is of a nature that is good, solid, and endurable.



HULUTAO.—Coolies' Quarters.

So far as it was possible to do so the heaviest part of the work was done by small contracts with rock contractors, etc., but a good deal of day labour was also unavoidable.

Accounts were rendered monthly, and vouchers and receipts obtained for every expenditure. The total sum expended at Hulutao on the works, up to the present, amounts to $1,028,850.90, but this does not take into consideration the purchase of land or expenses defrayed direct by the Moukden authorities.

It was a misfortune that the works had to be suspended when they were going on so satisfactorily, for, the preliminaries having been finished, the construction of the breakwater would have gone on rapidly to the completion of the first steamer berth.

WATERWORKS IMPROVEMENT IN JAPAN

The laying of private waterworks was permitted by the Government for the first time in 1911, says a Tokyo paper, and continues:—The new field opened for private enterprises, however, has been unexploited since. Now it is reported that in various localities waterworks are being laid by private companies. In Shinagawa, a suburban town, work was started last year by the town, and will be completed shortly. In Shinjuku and Oji, also in the suburbs of the city, private companies are being organized by the local business men for the laying of waterworks, each having a capital of 2,500,000 *yen*. The Government is reported to have also received petitions from Osaka and Odawara for the construction of waterworks. In Osaka a company with a capital of 1,000,000 *yen* has already been organized for the purpose of supplying water to the city, while in Odawara a company is also being formed by local business men with a capital of 60,000 *yen*. The authorities in the Home Office are reported to have approved the schemes and decided to grant charters to these companies.

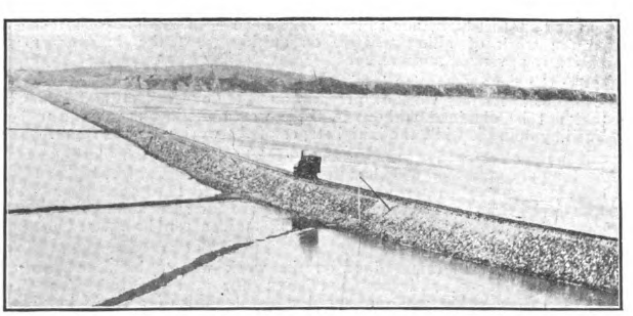
SINO-JAPANESE INDUSTRIAL DEVELOPMENT COMPANY

It was announced in Peking on July 4 that the new Sino-Japanese Industrial Development Co. was registered at the Ministry of Commerce on June 22. It is called the Chungji Shihyen Yuhsien Kungtse and has a capital of $5,000,000, equally subscribed by Chinese and Japanese in fifty thousand $100 shares. The head office of the Company is in Tokyo, but the general business bureau will be in Peking, with a branch office in Shanghai. There will be one Director-General and one Vice-Director General, who will be assisted by two Managing Directors.

No shares will be permitted to be sold to people of other nationalities than Chinese and Japanese. The Company will undertake to investigate industrial enterprises and the introduction of capital with which to work them, to finance industrial affairs directly and indirectly, to issue loans and attend to all other financial business. It disclaim any connection with, or responsibility for the former Sino-Japanese Trust arranged by Dr. Sun Yat-sen.

According to Chinese reports a high Chinese official will become Director-General of the Company, whilst Baron Shibusawa will be Vice-Director-General. The latter will depute a Japanese member of the Board to act for him. The Shanghai office will be managed by Chow Ching-chien, with Japanese associates.

The Japanese Legation, however, denied that Baron Shibusawa is a Vice-President of the new Sino-Japanese Industrial Development Co., but states that Mr. Karachi has accepted that post.



HULUTAO.—Embankment crossing an arm of the sea.

RAILWAY DEVELOPMENT IN MID CHINA

THE QUESTION OF EXTENDING THE TAO-CHING RAILWAY.

In the last issue of the FAR EASTERN REVIEW reference was made to the decision which has been arrived at by the Chinese Government to, among other things, connect the Tientsin-Pukow (Tsin-Pu) railway with the Peking-Hankow (Kin-Han) railway, the capital to be employed to be derived from German financial sources.

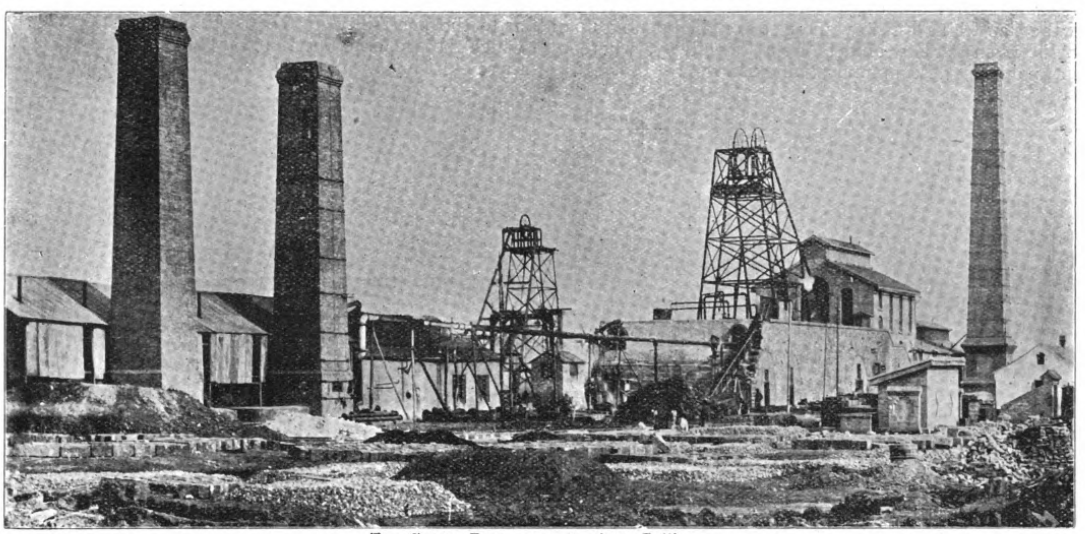
In the agreement which has been come to between the Chinese Government and Germany in this connection it has been specified that the line shall strike off from the Tsin-Pu railway at some point on the north of the great bridge crossing the Yellow River, near Tsinan-fu, the capital of Shantung province, but the route westwards to the Kin-Han railway has been left to be decided by a survey. There are two points of junction with the Kin-Han line under consideration, one near Changteh-ho—distinguished as the provincial home of President Yuan Shih-kai,—and the other the city of Taokow, where terminates the railway connected with the Peking Syndicate mines. This railway joins Taokow with Chinghua, crossing the Kin-Han railway at Hsinghsiahsien, and was originally built with the restriction that it should carry coal and cargo but no passengers, a hampering condition which the Chinese Government ultimately deemed it wise to remove.

The fact that the Government has now entered into an agreement to connect up the Shantung railway system with that to the west, combined with the fact that the Tao-Ching railway exists, and labors under certain disadvantages for want of further extension, calls attention to the necessity of China pursuing a policy calculated to co-ordinate her existing railway systems and bind them by judicious connections into as complete and effective an organ of communication and development as possible.

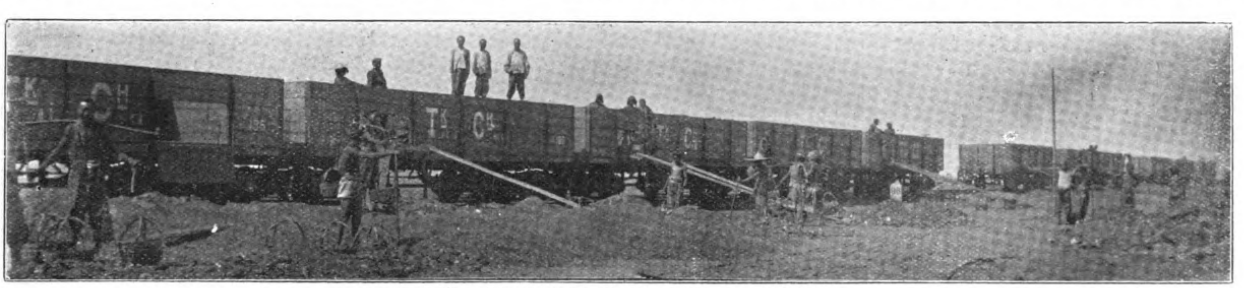
It is permissable therefore to examine the situation in the region affected by the decision of the Government to provide an outlet to the sea at Tsingtao for traffic from the northern part of Honan, with particular reference for the call that exists to connect the Tao-Ching railway with others which will enable it to become a generally useful and paying concern.

In the map which we publish in connection with this article the relation of the line with other systems will be seen at a glance, and furthermore it will be observed that the logical course for the Government to follow will be to utilise it as a means of reaching both the Tsin-pu railway on the east and the proposed line from Tatung through Taiyuanfu to Sianfu in Shansi province, on the west.

The question of the extension of the Tao-Ching railway is not a new one. It has been deemed necessary from the time the existing line was completed, and surveys have been made to ascertain the feasibility and advisability of extending both east and west. The results of those surveys clearly indicate that it is



TAO-CHING RAILWAY.—Jamisen Colliery.



TAO-CHING RAILWAY.—Loading a Coal Train.

TAO-CHING RAILWAY.—China-Hua Station.

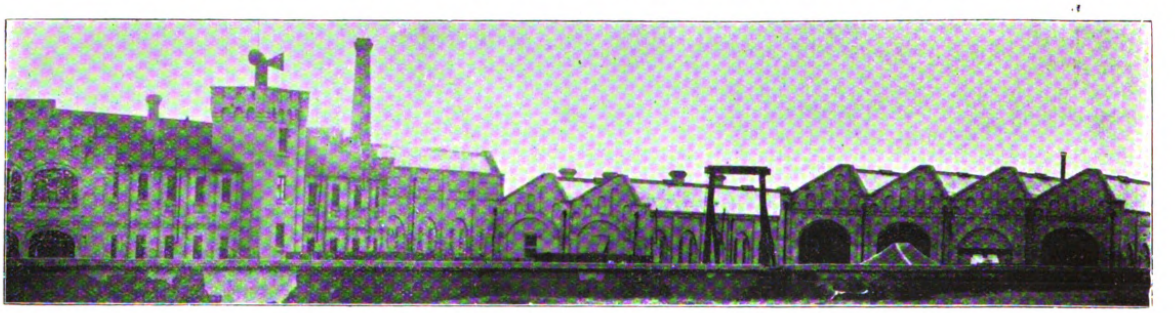
highly desirable both from the point of view of the ultimate success of the Tao-Ching Railway and also for the the opening up of the country between Taokow and the Tsin-Pu railway, where, at the moment, no means of communication exist.

While the survey was being made inquiries were instituted as to the possibility of the opening up of the country through which the proposed line would travel, and it was ascertained that there exist important centres for cloth, cotton, wool, hides, wheat,

TAO-CHING RAILWAY.—Coal Trains.

It has also been ascertained that an extension from Taokow through such important centres as Kaichow, Tungchangfu, and various other busy Chinese towns and cities, to, say, Tsiho, a point immediately north of the Yellow River, on the Tsin-Pu

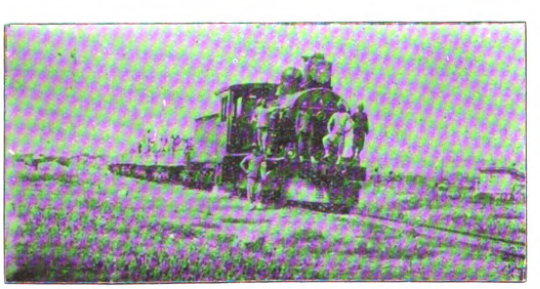
and peanuts, and also large quantities of straw-braid. It was also ascertained that at Tungchangfu the product from such important centres as Kuanchang, Nanli, Chaochang, Shinhsien, and Tangyi is collected before being sent to Tsingtao for export.

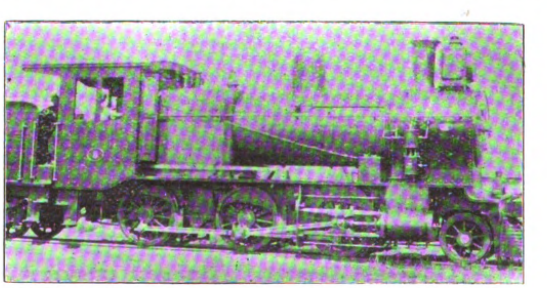


TAO-CHING RAILWAY.—Car and Locomotive Shops.

railway, would be, in the first place, desirable from the point of view of construction. The country is very flat, and the absence of large waterways places it in the favourable position of having a minimum number of bridges to construct.

Under existing conditions the transport facilities from Tungchangfu are limited to the very small waterways between that place and the Yellow River; the Grand Canal having been closed to navigation for many years, and this fact alone must of

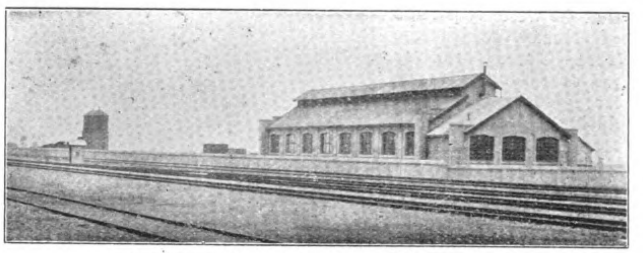




TAO-CHING RAILWAY.—Types of Locomotives.

necessity retard the trade to a considerable extent. The total trade per annum in straw-braid alone amounts to Tls. 1,000,000. This information was furnished to the Engineer of the Tao-Ching railway by the Chamber of Commerce at Tungchangfu, and he was assured that should the line be extended to the Tsin-Pu railway this figure could be very considerably increased. The inhabitants in the districts concerned are, too, naturally anxious

TAO-CHING RAILWAY.—Sin-Siang-Sien Station.



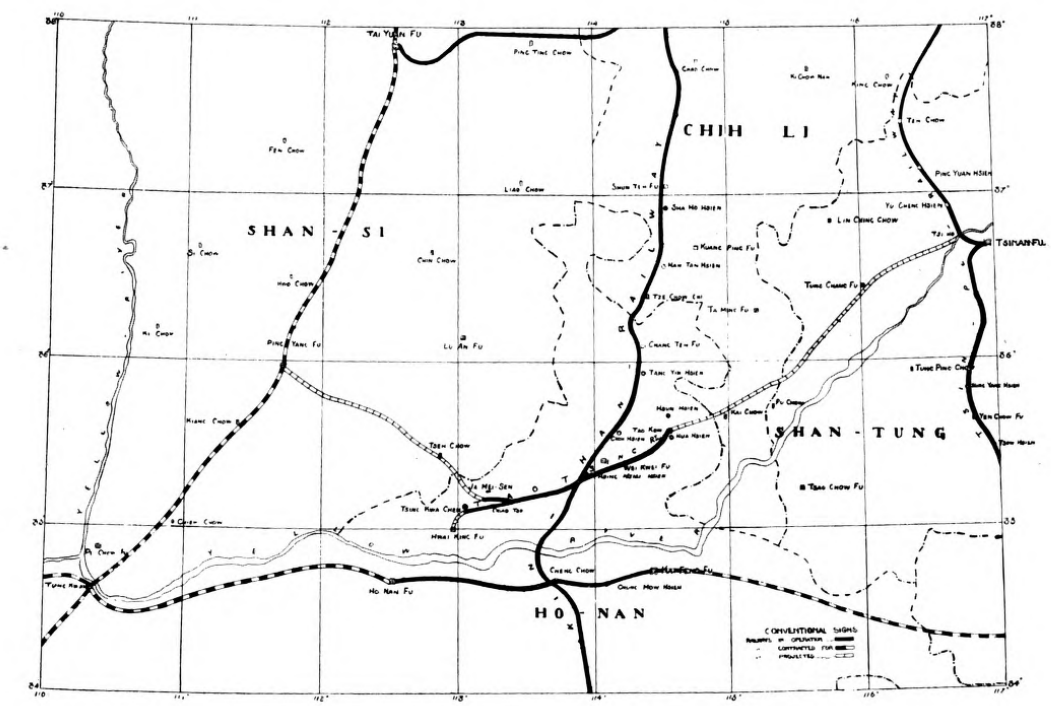
TAO-CHING RAILWAY.—Shop and Water Tank.

for this railway to be built, though the officials at the moment are preparing estimates and devising means to dredge the Grand Canal to Lintsingchow as a remedy for the falling off of trade in these important centres.

In addition to the revenue which such an extension would derive from the districts it actually touches, there would be a proportion of the existing traffic on the Tao-Ching railway which would traverse such an extension, and further the coal mines in the district of Weichingfu would supply a considerable amount of additional traffic. From detailed inquiries made it is estimated that from Taokow onwards markets could be found for an additional 500,000 tons of coal per annum. This in itself would provide very satisfactory returns for the extension alone and would more than double the coal traffic on the existing railway. Such returns are in no way problematical. The amount of coal transported on the present Tao-Ching railway has risen from 65,000 tons in 1905, to a figure in the neighbourhood of 500,000 tons in 1913, while other goods have increased from 22,000 tons in 1905 to 43,000 tons in 1913.

The passenger traffic also is of importance. In 1905 the number of passengers carried amounted to 48,900 while in 1913 they numbered 221,000. Naturally the connecting of two main trunk lines such as the Peking-Hankow (Kin-Han) to the Tsin-Pu railway would have a very important bearing on the passenger traffic receipts. In extending the line, too, the proportion of administrative expenses per mile would be considerably reduced.

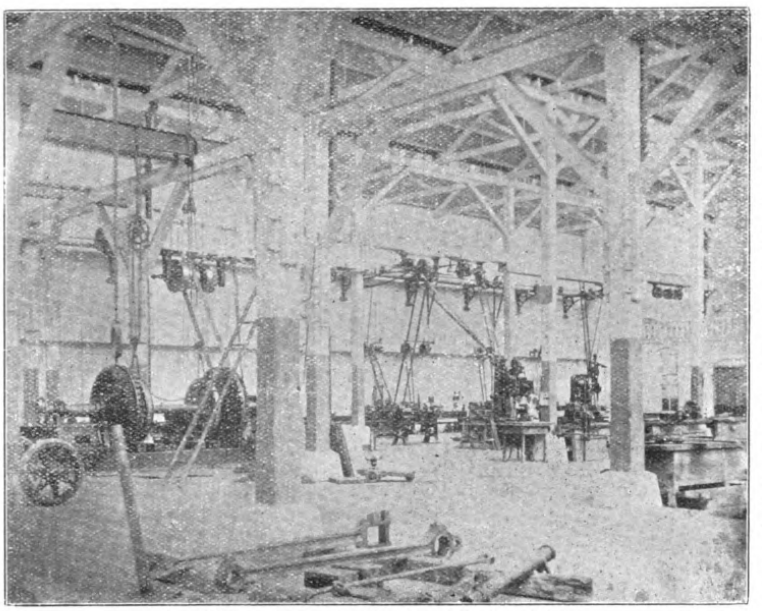
It is interesting to note that in 1905 the total receipts of the existing Tao-Ching railway amounted to Tls. 83,500, while the expenditure amounted to Tls. 75,000; in 1913 the receipts reached Tls. 370,000, the running expenses amounting to Tls. 277,000. Therefore, should the suggested extension be carried out it may safely be assumed that the immediate receipts would be somewhere in the neighbourhood of Tls. 750,000 per annum, with running expenses not exceeding Tls. 400,000. These results coupled with the traffic which is certain to be derived from the two main trunk lines mentioned should place the Tao-Ching railway on a paying basis within a very short time.



Sketch Map showing the proposed extensions of the Tao-Ching Railway.

It has from time to time been suggested that the Tao-Ching railway should be extended in a westerly direction into Shansi,

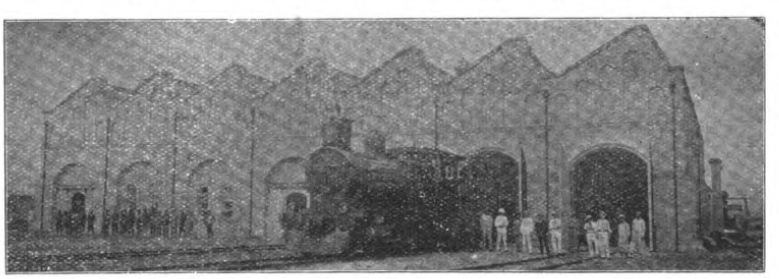
and surveys have been made with this object. In view of the proposed railway between Tatung and Chengtu crossing the Yellow River at Tungkwan it would appear to offer an excellent opportunity to extend the Tao-Ching Railway to link with this new line. The proposed railway from Tatung, passing through Shansi, would be feeding the Tao-Ching railway with a considerable amount of traffic from the mines in that Province, and this, coupled with the fact that the westerly portion of Honan, which the Tao-Ching railway passes through, is one large coal field, producing something like 1,000,000 tons a year, would undoubtedly soon place the Tao-Ching railway on a paying basis. It is certainly a fact that the limited sphere of the Tao-Ching railway seriously hampers the production of coal in the Honan field, and the above figures could be more than doubled with the extension of the railway as suggested.



TAO-CHING RAILWAY.—Interior of Machine Shops.

The Tao-Ching railway is of standard gauge and was built by Messrs. Pearson & Son for the Peking Syndicate, Limited. A concession was obtained in 1898 to build the railway, and work was commenced in 1900. The Boxer outbreak caused a suspension of construction and a resumption was not made until 1902. On July 24, 1904, the line was opened for traffic, the distance being 90.39 miles; since that time it has been extended to a length of 93.21 miles. There is also a branch line of 1.11 miles in length. The cost of construction is set down at £614,600.

The railway was built expressly for the purpose of carrying coal from the mines of the Peking Syndicate at Jamisen to the Hwai river at Taokow. No provision was made at the time of opening for the carrying of passengers, but as time went on the restriction against the line in this respect was withdrawn and passengers gradually availed themselves of this means of transport, covered goods wagons being used for the purpose of carrying third-class passengers, while two first and second-class composite carriages were purchased from the Peking-Mukden line. Two years ago a new train was built at the Works connected with the line, the passenger carriages having been made up from under frames of goods covered wagon tops.



TAO-CHING RAILWAY.—Locomotive Shops.

The traffic consists of local passengers travelling from station to station, principally third class, and goods consisting of salt, bamboo, ginger, tobacco, iron, kerosone and general mixed merchandise and coal. One passenger train runs each way daily, and one coal and goods train daily for the full length of the line, while two coal trains travel half the length of the line per day. There are no long or fast runs the passenger trains being timed at 25 miles and the goods and coal trains at 18 miles per hour.

The line is through country which is perfectly flat, with no tunnels, and only one bridge of any size, viz., eleven 20ft. and four 30ft. spans. Altogether there are 176 other small bridges and culverts, the total length of waterway being 3,197.5 ft., or 34.2 ft. per mile. The rails used are 75 lbs. per yard and are flat bottomed. They are fastened with spikes to Japanese sleepers.

The total receipts for 1912 were $556,437, the expenditure being $457,112, (excluding interest amounting to $401,000), passengers contributing $101,772 and freight $454,665. The number of passengers carried totalled 246,156, and the freight amounted to 513,875 tons.

The foreign staff on the railway consists of the Manager and Traffic Superintendent, the Locomotive Superintendent, the Engineer of Way and Works, and the Accountant and Storekeeper. The native staff consists of 1,080 men, including Government representation of about 10 men.

The rolling stock consists of ten locomotives, 161 wagons and 24 passenger and other vans.

Locomotives—Six Tender (goods) 2-6-0 coupled bogies; cylinders 18in. diameter × 24in. stroke. Wheel base—rigid, 14ft.; total 22ft. Weight 95 tons.

Two tank (shunting) 0-6-0; 40 tons; cylinder 16in. diameter × 22in. stroke. Wheel base 12ft. 6in.

One tender (passenger) 4-4-2; 120 tons.

One tank small tender (shunting) 0-6-0; 45 tons.

Coaching vehicles —2 1st Class Cars; 2 1st and 2nd Composites; 2 Second class; 4 Brake vans; 1 Luggage Van (and Postal); 9 3rd class; 2 3rd and Brake Vans Composites; 5 Pony Cars; 1 Inspection Car; 1 Brake down Van; 3 Flat wagons; 8 Low sides; 18 12 tons high side coal trucks; 125 30 tons high side coal trucks; 6 Covered goods 30 tons; All 4 wheel bogies except 12 tons and Brake down van, they being 4 wheels (2 Axles).

EXPRESS SERVICE SHANGHAI-PEKING VIA PUKOW

Messrs. Thos. Cook and Son inform us that for the convenience of through passengers to Peking travelling by the Pukow-Tientsin Express arriving at Tientsin Central Station at 10.35 p.m. on Tuesdays, the following arrangement came into force on June 23:—On arrival of the up Express from Pukow at Tientsin Central Station first class through passengers for Peking, if they choose to do so, may stay over night on board the car in the same berth occupied by them during the journey on payment of a charge of 2.00; but they have to leave by all means not later than 8 o'clock the next morning.

MR. YANG TCHENG

The recent conclusion of an agreement whereby the area policed and controlled by the authorities of the French Concession at Shanghai has been extended gives ground for hope that the question of the extension of the International Settlement will also shortly be solved. The negotiations on the Chinese side are in the hands of Mr. Yang Tcheng, Special Envoy for Foreign Affairs, whose photograph we reproduce on this page. Mr. Yang Tcheng took up his duties in Shanghai early in November and at once established himself in the good graces of both the foreign and Chinese Communities. He brought to his local labors ripe diplomatic experience obtained elsewhere, and this coupled with broad tolerance and sympathetic understanding has enabled him to emerge successfully from the delicate negotiations in which he has constantly taken part since his arrival.

Mr. Yang Tcheng spent six years in Japan when he was very young and later studied for a similar period at the Tungwen College at Canton. Thence he went to Germany as a student and finished his education at the Leipsic and Berlin Universities. While in Germany he devoted himself principally to studying law and military tactics. Returning to China in 1900, just before the Boxer Outbreak, he became Professor of German and of Law at the Peking University under Dr. Martin. A period was put to his usefulness in this sphere by the troubles and he went to Shantung, where he became Secretary in the yamên of Yuan Shih-kai who was then Governor.

Mr. Yang Tcheng, Special Envoy for Foreign Affairs at Shanghai.

When Prince Chun (afterwards the Prince Regent) went on his mission to Germany, he was accompanied by Yin Chang and the latter's position of Secretary to Prince Ching and Li Hung-chang was taken by Mr. Yang Tcheng. Subsequently he returned to Shantung, was given the rank of Taotai and filled the position among others of Director of Foreign Affairs, Director of Mines, and Director of Railways. Late he was made Chinese Minister to Vienna where he served for two years. He was then transferred to the post of Minister at The Hague and Berlin. He returned to China on account of family mourning and lived privately in Canton for some time. When Viceroy Chang Jen-chun went to Nanking Mr. Yang Tcheng accompanied him as Chief Adviser on Foreign Affairs, Commerce and Military Administration. After the Revolution Mr. Yang Tcheng went to Tsinanfu where he became Chief Adviser to the Governor with the title of President of Foreign Affairs. Later he filled the position of Commissioner for Home Affairs in Shantung.

The Government's appreciation of Mr. Yang Tcheng's services has been shown by the bestowal of the second class order of the Chiaho.

FAR EASTERN RAILWAYS

CHINA

Shanghai-Nanking Railway.—The following figures of traffic returns (approximately) for the week ended June 27 are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	44,892	10,555	55,447
1913....	42,411	13,677	56,088
Increase.	2,481		—
Decrease	—	3,122	641

For fifty-two weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	2,525,206	553,041	3,078,247
1913....	2,264,743	514,646	2,779,389
Increase.	260,643	38,395	298,858
Decrease	—	—	—

Week ended July 4, (the first week in the 1914-15 fiscal year).

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	44,651	11,750	56,401
1913....	43,766	12,319	56,085
Increase.	885	—	316
Decrease	—	569	—

Week ended July 11.

Year.	Passengers.	Goods & Sundries	Total for the week.
	$	$	$
1914	42,705	12,757	55,462
1913	41,753	11,024	52,777
Increase.	952	1,733	2,685
Decrease	—	—	—

For eleven days.

Year.	Passengers.	Goods & Sundries	Total for the week.
	$	$	$
1914	66,848	19,102	85,950
1913	67,012	18,172	85,184
Increase.	—	930	766
Decrease	164	—	—

Week ended July 18.

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	42,205	11,723	53,928
1913....	54,840	10,955	65,795
Increase.	—	768	—
Decrease	12,635	—	11,867

For three weeks.

Year.	Passengers.	Goods & Sundries.	Total.
	$	$	$
1914....	109,053	30,825	139,878
1913....	127,854	30,778	158,632
Increase.	—	048	—
Decrease	18,801	—	18,754

Chefoo-Weihsien Line.—What is described as one of the largest and most representative meetings known in Chefoo was held on April 21st to further the agitation for the speedy commencement of the Chefoo-Weihsien railway. Mr. J. Howard Stooke, chairman of the Chamber of Commerce, who presided, said that the value of the breakwater, which might now be regarded as assured, would be much lessened were the connection of Chefoo with its hinterland not secured. The breakwater and the railway were two parts of one scheme. The Chairman announced that the Chinese Community was memorializing the Government about the railway and it was suggested that the foreign community should memorialize the Diplomatic Corps at Peking. The meeting unanimously approved of this being done.

Canton-Hankow Railway.—The Canton Correspondent of the *N.-C. Daily News* gives the following account of the progress made with the construction of this line:—

The Kwangtung part is to be constructed from Canton to P'ingshek on the borders of Hunan province. During the early months of the year it was opened as far as K'onghau but it is promised that shortly it will be opened as far as Ushek. There will then be something less than twenty English miles beyond this before the line reaches the district city of Shiuchow,

Meanwhile, this part of the line is delayed only because there are one or two small tunnels to be bored through; but navvies are at work on them, and it is believed that by the end of the year, the trains will be running all the way from Canton to this district city,—about three hundred miles. Whilst these tunnels are being bored, stations have been erected, and also ways opened between the several stations and the river, as well as between the stations and the towns. It is unfortunate that so frequently the stations are planted so far from the cities, but it must be assumed that this could not be helped.

The line between Shiuchow and Lokch'eung is partially laid, according to this report, but there are at least six bridges to be constructed, and these will take some little time to erect. In most cases the foundations of these bridges have been laid, and so the most difficult and important part of the bridge building has been accomplished. It is believed that at no distant date, the line will be opened as far as Lokch'eung. Beyond this, the line has been surveyed, even as far as Pingshek. Until there is some hope of progress on the Hunan side, so that the two provinces may be joined, there is not much need to be specially disturbed by dilatoriness on this section. The country is very sparsely populated, and for some time the traffic, even in passengers, must be small, though it seems remarkable where passengers come from, for as soon as any bit of line is opened here in the south, people crowd forward.

Apparently from the outlook of this carefully prepared report it is believed that there will be considerable traffic receipts from the railway, though how it will be able to compete, except for trans-provincial goods, one finds it difficult to discover. Scores of miles of the line are laid on or near the river's bank, and the native boats glide down the river, and carry much stuff, with the loss of little time, and the expenditure of no coals and little labour.

On the other hand, where there is trans-provincial transference of goods, either on one side of the mountain that divides the two provinces, or the other, there is the flow of the river to contend against, and here, without doubt, the train will have the pull over river traffic, for in addition to poling against the stream, there must be a re-shipping of cargo, which coolies have to carry across the mountains. Anyway the promoters of the line seem quite satisfied, and by this time they should have enough data behind them to warrant them in forming conclusions as to future prospects. Many will be glad when it will be possible to travel from Hongkong to Shiuchow in one day.

The Chekiang Railway.—It is reported that a satisfactory arrangement for the handing over of the Chekiang Railway to the Government has been arrived at. The price to be paid to the shareholders of the company has not been officially stated, but is said to be $17,000,000.

Kirin-Changchun Railway.—The traffic receipts of the Kirin-Changchun Railway for March decreased to S. Y.67,788. The two terminal stations at Toutaokon (the junction between the S. M. and the K.-C. lines) and Kirin contributed the largest shares, giving S. Y.26,651 and S. Y.24,738 respectively. The Changchun Station followed with S. Y5,307. The receipts of the other stations were less than S. Y.2,000.

Pukow-Singyang Line.—It was the original intention to start construction of this line from Wu-i and Singyang simultaneously, but owing to the disturbed conditions in Honan this could not be done. The Director General, Mr. Shen Yun-pei has now given instructions that work should be started on the Singyang section as soon as possible.

JAPAN

Fuel Oil For Japanese Railways.—A contract may shortly be concluded between the Imperial Railway Board and the Japan Petroleum Company, the owners of the wonderful Akita well, for the supply of oil fuel. Since it was approached by the company with the proposal, shortly after the great capacity of the well was discovered, the Board has been considering the relative advantages of oil and coal fuel. These investigations appear to have favourably impressed the authorities, as it is currently reported that the negotiations have made much headway. It is said that the company is confident of being able to supply at least sixty or seventy thousand koku a year, at the rate of 1.80 *yen* per koku This price is more than one *yen* below the old contract price.

CHOSEN (KOREA)

Railways in Chosen.—In a report by the British Consul-General at Seoul it is stated that during 1913 the Korean railways carried a large increase of traffic. The Seoul-Gensan line is expected to be finished towards the end of this year. No light railway was constructed in 1913. Starting from the financial year 1914-15, the third railway programme is to be undertaken. This includes the reconstruction of the Seoul-Fusan line, which was originally built in a hurry owing to the exigencies of the time, and which, though since then to some extent improved, requires reduction in gradients, etc. A continuation of the Seoul-Gensan line from Gensan to Yong-heung, 34 miles in length, passing through Munchon and Kowon, is also to be laid down later, and the extension is expected to be carried on to Hamheung. Japan seems to be keen on Korea's development.

MONGOLIA

Verkne Udinsk-Kiakhta Line.—A Berlin telegram dated July 3 states that the Russian Imperial Council has granted the means for building the railway from Verkne Udinsk to Kiakhta.

THE PHILIPPINES

Extension of Existing Lines.—Railway construction in the Philippines is being continued only in line with the plans adopted about a year ago and new enterprises are not being undertaken. Within the scope of plans being realized, the chief interest centers in the approaching completion of the Manila Railway to Baguio, the mountain capital. On this branch the grading has been practically finished and the track has been laid up to the foot of the first rack grade, where the cog-road section begins. This latter section climbs a 14 per cent. grade for 10 miles through magnificent mountain scenery. On the entire branch there are to be 5 tunnels approximating a total length of 0.932 mile, of which the longest is 0.262 mile. One tunnel is practically completed, the headings having been driven through on three and a start made on the fifth. All the material for the cog road is now on the ground and work started about April 1. It is expected that the road will be ready for traffic in 1916.

Other branches of this line also show progress. The branch line from San Francisco to Arayat is completed to Santa Ana and will be finished by the end of April. The branch from Paniqne to Rosales, San Quintin, and Tayug is complete to about 8 miles from San Quintin. North of Aringay the track extension is delayed at the Naguilian River, 8 miles south of San Fernando, where a bridge of 11 spans, 150 feet each in length, is being built. It will be the largest bridge in the Philippines. South of Manila, running in a northeasterly direction from Lucena toward Laguimanoc, 12.427 miles of track have been laid. Between Laguimanoc and Siasi there are 5,000 at work grading.

At Albay large forces of men are at work in both direction on the Albay-Nueva Caceres division. From Albay and Legaspi north to Tabaco the track is laid to Bacacay. Track has been laid to Ligao, a distance of 24.85 miles; Iriga will be reached in about a year. The line reaches a rich hemp country. The company has altogether about 10,000 men at work on the various extensions now in course of construction. The company is placing in service on its main line a train de luxe of the most advanced pattern constructed in its shops near Manila.

Work on the lines of the Philippine Railway Co., the second principal system in the islands, has not been pushed very rapidly in the past few months and at present is practically at a standstill; and, in fact, the company reports that no further extensions are contemplated at the present time.

In this connection the probable extension of the use of autotrucks and automobiles as temporary arrangement in lieu of railway lines is being discussed generally, and the plan is understood to have the endorsement of the executive department of the island government. At present there is a considerable service of such vehicles centering in Tacloban, the capital of Leyte Province, where motor transportation lines are operated connecting that city with several important towns in the interior of the Province. The splendid provincial roads, built since American occupation, offer unusual facilities for extending such service. Railway projects in Iloilo and Cebu at present are receiving no further development, and the situation on the whole is considered unfavorable and unsatisfactory.

GENERAL

The Amur Railway.—The following information is from the report by H. M. Consul at Vladivostok, Mr. R. M. Hodgson, on the trade of that district in 1912:—

The Amur Railway, which is to connect, by means of a line entirely in Russian territory, the Siberian railway system with Khabarovsk and thence, by the already existing Ussuri Railway, with Vladivostok, has been progressing with unexpected rapidity. The distances on this line are as follows:—

	Versts.
Head section, from Kwenga to Urium ..	182
Western section, from Urium to Kerak..	596
Middle section, from Kerak to River Dyia	633
Eastern section, from River Dyia to Khabarovsk	480
Branch from Botchkaryoyo to Blagovestchensk	100
Short branch lines run to—	
Tchasovinskaya	28
Reynovo	63
Tchernayevo	40

Traffic on the head section has been open since 1910 and the western section was opened in the autumn of 1913. The whole of the middle section will be handed over for working

the term the regular liners *Tango-maru* and *Aki-maru* were replaced by the *Katori-maru* and the *Kashima-maru*, each of an aggregate tonnage of 10,000 tons. The new steamer *Tokushima-maru* was also placed on the route as a special liner. The steamer *Wakasa-maru*, which carried a number of Japanese emigrants to Brazil, was commissioned, on the return voyage, to ship cargo from Europe and other ports.

American Service.—On the voyages to America shipments were very dull. This was due to competition between the various shipping companies. On the outgoing voyages some of the Company's liners had to carry a quantity of coal to be used on the return voyage, and yet their bunkers were nearly empty on their return. There was a considerable decline in the shipments of wheat and flour, which constitute the principal merchandise shipped on the return voyages, but the consignments of machinery, cotton and salted fish were rather brisk. The Company tried its best to secure as much cargo as possible at intermediate ports from Japan to Shanghai and Hongkong, but without result. On both the outgoing and return voyages the cargo shipped showed a considerable decline.

Australian Service.—Shipments from Japan to Australia were very small, but from Hongkong and Manila a considerable quantity of merchandise was shipped. On the return voyages there were considerable shipments of wool, lead, and fertilizer, etc. During the six months under review the *Inaba-maru* was replaced by the *Tango-maru*, withdrawn from the European service for the purpose. The strike of labourers in Australia has had a very bad effect upon shipping traffic there. The passengers carried numbered about the same as in preceding years.

Bombay Service.—On both the outgoing and return voyages the shipments were large, especially on the outgoing voyage, this being due to large shipments of cotton. Shipments of yarn consigned to Shanghai and Hongkong fell off considerably. For the benefit of cotton spinners in Japan the Company during the cotton season increased its liners from six to eight, so that instead of a fortnightly service there was a service every ten days.

Calcutta Service.—The shipments from and to Japan were large. Shipments of beans from Rangoon increased considerably, but other cereals were not so brisk. The cabin passengers showed an increase. Competition on this route continues, and freight rates during the period have ruled very low. As a result, the Company has suffered considerable losses and experienced great hardships in carrying on the competition. However, trade between Japan and India, through this service, is steadily developing.

New Steamers.—The new steamer *Yasakamaru* (12,000 tons), built in Japan, was launched on March 14, while another new steamer, the *Suwa-maru*, of equal tonnage, was launched on March 29. These vessels are expected to be completed in October next, when they will be placed on the European service. In addition the Company has ordered from domestic and foreign yards a steamer of 12,000 tons and six steamers, each of 7,500 tons, all of which are to be completed between August this year and April next.

MINING

Kailan Mining Administration. — The total output of the Administration's mines for the week ended June 20, amounted to 61,542.90 tons and the sales during the same period to 61,070.89 tons.

Week ended June 27, output 58,285.98 tons, sales 48,676.58 tons.

Week ended July 4, output 59,817.43 tons, sales 43,343.70 tons.

Week ended July 11, output 61,199.74 tons, sales 46,567.10 tons.

FINANCIAL

Hongkong Coinage Questions.—The Colonial Treasurer (Hon. Mr. A. M. Thomson) makes the following reference to the Colony's currency problems in his report for 1913:—

The stock of subsidiary coins on the 31st December was of the face value of $149,935.72 as follows:—

50 cents	$ 2,973.00
20 „	33,631 60
10 „	74,162.00
5 „	5,196.85
Copper	33,972.27
	$149,935.72

while $200,000 in 10 cent-pieces were shipped to London on the 19th December.

The value in the Treasury Books was $326,612.09, discount written off the stock being taken at 7 per cent. Coins of the face value of $1,040,000 were sent to England during the year for purpose of demonetization.

The limits between which the rates of discount ranged were:—

cent-pieces.	per cent. to	per cent.
50	par	3¾
20	3½	8
10	6⅞	12½
5	1	6
Copper	par	—

On the 1st July, an Ordinance (No. 15 of 1913) prohibiting the circulation of foreign silver and nickel coins was passed to come into force on the 1st March, 1914.

The circulation in December of notes of the three Banks having authorized issues was as follows:—

Hongkong and Shanghai Bank ...	$18,417,339
Chartered Bank of India, Australia and China	5,429,671
Mercantile Bank of India	704,742
	$24,551,752

Ordinance No. 13 of 1913, which came into force on the 1st August, prohibits the circulation of any notes other than those of the Banks whose issue is authorized by law or charter.

In consequence of this new law the circulation of Chinese and Portuguese bank notes has entirely ceased.

Banque de l'Indo-Chine.—The report for 1913 of the Banque de l'Indo-Chine states that in spite of the troublous times in the regions where the business of the bank is carried on the results of the twelve months' working were satisfactory. In fact the profit for the first half-year was the highest yet recorded, reaching the sum of Frs. 3,720,764. A dividend of Frs. 27.50 was declared on January 2 for this period, and out of a profit of Frs. 3,362,479 for the second six months a similar dividend has now been declared, making Frs. 55 for the year, as against Frs. 52.50 in 1912, and Frs. 50 in 1911. It is noted that the amount appearing on the balance-sheet under "bank premises" has increased from Frs. 4,600,832 last year to Frs. 7,421,054, and this is partly due to the buildings that have been erected in Singapore and Shanghai, although it is principally on account of the acquisition of a site for new premises in Paris, the present quarters having become altogether inadequate. The development of the bank in consequence chiefly of the extension of its business in China, and the prospective formation of new branches, has led the directors to consider the erection of premises perhaps a little large at present, but which constitute a prudent provision for the future, while it will be possible to let to Colonial associations having relations with the bank the portions which are not yet required. The report further states that it will be necessary to take into consideration the building of new premises at Pondicherry and Peking; while the construction of offices of more modest proportions is being proceeded with at Papeete and at Mengtze, in Yunnan, where the Government has desired the formation of a new agency.

Referring to the economic situation of the countries within the bank's sphere of activity, the report goes on to say that the export of rice from Cochin-China in 1913 amounted to 1,180,000 tons, a quantity which had not been attained since 1907, and the prospects for the current year are such that a still greater export trade is expected. As a result of the favourable harvest business in Cambodia and Battambang has again become normal. In Tongking the undertakings had to suffer slightly from a decline in busines, owing to the less plentiful harvest of rice and maize; but the production of ores was greater than in 1912, and, with the exception of rice a favourable harvest of land products was won in Annam. The agencies of the Banque de l'Indo-Chine in Hongkong and Canton did not suffer from the suspension of payment in Singapore and Siam. After stating that a general improvement took place in China, and referring to the first part of the reorganization loan, the report mentions that two questions are at present attracting attention—the redemption of the paper money issued during the revolution and the general monetary reform. The solution of these problems requires the assistance of European banks, supported by their respective governments, and the establishment of adequate guarantees. Since the conclusion of the last loan the results have been more encouraging than had been expected.

Netherlands Trading Society. — The General Balance Sheet and Profit and Loss Account of the Netherlands Trading Society to December 31, 1913, show that the net profits amount to Guilders 5,071,577.63 (£422,632), out of which, after providing for the statutory reserve to the extent of Guilders 561,444.92 (£46,787), a dividend of 9½ per cent. has been declared. Combined statements of liabilities and assets and of profits and losses, are drawn from the balance Sheets and profit and loss accounts of the head office and branches. In accordance with a resolution passed by the general meeting of shareholders on December 8, 1913, an issue to shareholders has been made of 5,000 new shares of Guilders 1,000 at 145 per cent., which were paid for January 6, 1914. The total paid up capital has been increased to Guilders 50,000,000.

PERSONAL

Mr. F. M. Sah has been appointed to attend the Postal Conference at Madrid in company with Mr. Piry, as representatives of China. Mr. Sah has been connected with the Board of Posts and Communications for some years and is known as a progressive and well educated official.

Mr. J. E. Foley, Traffic Managar of the Peking-Mukden Railway, and Mr. K. H. Chen, secretary of the Ministry of Posts and Communications will represent China at the Railway Conference to be held in Marseilles. Mr. Stells will act as Traffic Manager of the Peking-Mukden line during the absence of Mr. Foley.

Mr. T. W. T. Tuckey, the chief engineer of the Southern portion of the Tientsin-Pukow Railway, has received the Fourth Class Chiaho Decoration, in recognition of his services.

Mr. John M. Darrah, the United States Postal Agent at Shanghai, has had conferred upon him, by a Presidential Mandate the Fourth Class of the Order of the Excellent Crop.

SOUTH MANCHURIA RAILWAY COMPANY.

STATEMENT OF ACCOUNTS FOR 1913.

Following is the statement of accounts for the South Manchuria Railway Company for the fiscal year 1913:—

GENERAL BALANCE SHEET

Assets.

Capital unpaid		40,000,000.000
Property taken over from the Japanese Government		100,000,000.000
Stores		6,966,411.464
Coal in stock		1,301,116.020
Shares in other companies		782,845.000
Capital expenditure:—		
Railway	72,262,371.051	
Steamship	4,892,636.558	
Electricity	4,747,114.827	
Gas	1,296,649.538	
Harbour and Wharves	10.965,976.080	
Mines	12,247,148.450	
Workshops	6,064,830.207	
Hotels	1,617,224.159	
Land Impr'ts	4,016,938.385	
Land	9,771,874.602	
Buildings	10,551,198.029	
Total		138,433,961.886
Discount on debenture issue, less amount written off		5,042,451.960
Sundry Debtors		2,073,919.325
Payments on Suspense a/c		2,097,863.105
Loans		6,119,089.500
Payments on a/c of uncompleted works (Workshops)		773,280.168
Payments on a/c of uncompleted works (Construction)		358,808.581
Deposits		8,093,403.451
Postal and Revenue Stamps		10,117.445
Cash in hand and at Bank		452,179.609
		312,505,447.514

Liabilities.

Capital Authorized 200,000,000.000		
Capital subscribed		160,000,000.000
Reserve prescribed by Law		1,132,888.660
Special Reserve		8,900,000.000
Debentures		117,156,000.000
Land Administration a/c		47,939.213
Sundry creditors		3,130,718.763
Receipts on Suspense a/c		10,148,670.535
Employees' Savings Deposits		2,279,627.900
Guarantee Money		136,533.730
Agencies		254,577.410
Balance brought forward from Last Term	2,151,212.299	
Balance for the Term	7,167,279.004	
		9,318,491.303
		312,505,447.514

PROFIT AND LOSS ACCOUNT FOR THE FISCAL YEAR ENDED MARCH 31, 1914.

Dr.

To Railway Expenditure	7,913,948.370
„ Steamer „	799,286.640
„ Mining „	12,571,681.200
„ Harbour „	1,728,910.500
„ Land „	1,951,538.280
„ Hotel „	280,636.530
„ Electricity „	642,809.830
„ Gas „	106,057.360
Sundry Losses	338,354.793
General Management Expenditure	2,671,917.640
Interest on Debentures	5,564,910.000
Writing off Discount on Debentures Issue	680,093.280
Balance for the Term	7,167,279.004
	42,417,123.427
To Reserve prescribed by Law	358,363.960
„ Dividend on Government shares	2,500,000.000
„ Dividend to Shareholders other than the Government, at the rate of 6 per cent. per annum	1,058,427.200
„ Supplementary Dividend to Shareholders other than the Government, at the rate of 1 per cent. per annum	176,404.520
„ Special Reserve	2,000,000.000
„ Bonus to Officers	300,000.000
„ Honorariums for Retired Officers	300,000.000
„ Balance carried forward to the next term	2,625,295.623
	9,318,491.303

Cr.

By Railway Receipts	22,275,132.040
„ Steamer „	672,616.660
„ Coal „	14,372,232.430
„ Harbour „	1,911,716.570
„ Land „	900,852.660
„ Hotel „	259,961.510
„ Electricity „	977,880.330
„ Gas „	183,500.420
„ Sundry „	117,509.087
„ Interest Account	745,721.720
	42,417,123.427
By Balance brought forward from the preceding Term	2,151,212.299
„ Balance for the Term	7,167,279.004
	9,318,491.303

Dr. Nomura, President, and Mr. D. Ito, Vice-President of the South Manchuria Railway Company, have been compulsorily retired. Lieut.-General Baron Y. Nakamura has been appointed President. He was previously the President of the Steel Works at Edamitsu. Mr. Kunisawa has been appointed Vice-President.

PUBLICATIONS, CATALOGS, ETC.

The Deutsche Maschinenfabrik, A. G., of Duisburg is noted for its splendidly turned out trade books and brochures. Recently we made reference to "The Industrial Harbour" relating to cranes and transporting appliances for the quick handling of goods in modern harbors, and we are now in receipt of two more books, one devoted to giant cranes and the other to cold rolling machinery. The Deutsche Maschinenfabrik A. G. has been engaged in constructing hoisting appliances since the year 1830, and the book relating to giant cranes gives interesting particulars in regard to the various cranes turned out from the works of late years. These include the largest revolving and floating crane in the world of 250 tons maximum working capacity, constructed for the Imperial Naval Yard in Wilhelmshaven. The book on cranes as well as that on cold rolling machinery, is excellently illustrated.

Messrs. Mather & Platt, Ltd., send us their recently issued book on patent mechanical filters for industrial purposes. This catalog is splendidly illustrated and shows a number of the installations supplied by Messrs. Mather & Platt, Ltd., to concerns in various parts of the world.

The Selson Engineering Co. Ltd., of Queen Victoria Street, London, forward us an attractive abridged pamphlet of Machine Tools. The pamphlet is well illustrated and full information is supplied in regard to this firm's various specialities, including shaping, milling, rounding, gear cutting, broaching, planing and other machines, lathes of all kinds, etc. etc.

The Administrations of the Chosen Railways and the Shantung Railway Company have recently issued leaflets giving very complete information about their respective systems, and showing the connections that can be made with other lines.

THE FAR EASTERN REVIEW

COMMERCE :-: ENGINEERING :-: FINANCE

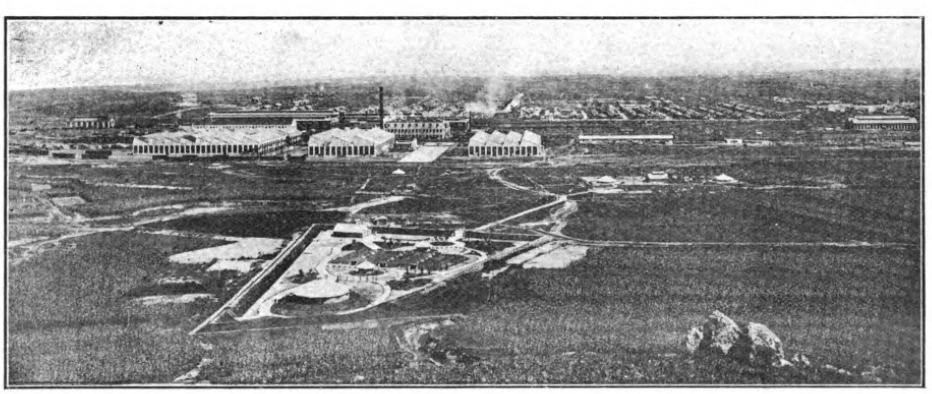
VOL. XI. SHANGHAI AND MANILA, AUGUST, 1914 No. 3

THE DEVELOPMENT OF DAIREN

ACTIVITIES OF THE SOUTH MANCHURIA RAILWAY

A visit to Dairen, Tairen, Tailen, Dalny or Dalni—as the port of the Japanese Leased Territory of Kwangtung is variously called—by anyone whose previous acquaintance with the town dated a decade back, would induce wonder and not a little admiration. The soul that animates Dairen is the South Manchuria Railway Company. In every direction signs of its activity are to be seen. Is it the huge million yen Yamato Hotel? By whom constructed and by whom to be operated? The South Manchuria Railway Company or Mantetsu, to give it its Japanese name! Is it the magnificent Shinto Temple now being constructed, the immense Railway Workshops at Shakako, the Schools, the Central Laboratory, the Hospitals, the Experimental Bean Mill, the Tramways, the sea-side resort at Hoshigaura, the Electric Light Plant, etc., all were brought into existence by this great railway company, which is one of the proudest monuments of Japan's organizing powers.

The South Manchuria Railway Company is a child of war. It will be remembered that at the conclusion of the Russo - Japanese War in 1905 by the Treaty of Portsmouth Japan acquired the railway through Manchuria from Changchun to Dalny and Port Arthur and all the branch lines, coal mines, etc. Japan also acquired all the rights formerly held by Russia in the railway zone and in the leased territory. The South Manchuria Railway Company was formally established on November 13, 1906 with Baron S. Goto as President. When he became Minister of Communications in July 1908 Mr. Z. Nakamura succeeded him as President of the Company and retained the position until the end of 1913 when he was succeeded by Dr. Nomura. The latter was retired by the Government in July, 1914 and Lieut.-General Baron Nakamura appointed in his stead.



General View of Shakako

The capital of the Company is Y200,000,000 of which the Japanese Government owns half. The amount of capital actually paid up to date is Y.60,000,000. The share of the Japanese Government is the assessed value of the railway lines, coal mines and other properties and rights acquired from Russia and handed over to the Company. Debentures to the value of Y117,156,000 have been issued.

The gauge of the main railway and branches when taken over was 3 feet 6 inches and the gauge of the Mukden-Antung line was 2 feet 8 inches. By June, 1908 the entire main line and the Fushun and Yingkou branches had been transformed to the standard gauge. The work of transforming the Mukden-Antung line to the standard gauge was begun in August, 1909 and was completed in November, 1911.

Adequately to deal with the numerous enterprises of the Company in a single article would be impossible, and we propose therefore to confine ourselves for the present to the Shakako Railway Works.

The Shakako Railway Workshops

The official opening of the workshops took place on November 23, 1911 when the leading residents and Government Officials of Dairen and Port Arthur were present. Mr. Z. Nakamura, the President, and Mr. S. Kunisawa, the Vice-President of the Railway Company, delivered opening addresses, and Mr. M. Yoshino, the Chief Mechanical Engineer, submitted a report on the progress of the workshops from the first cutting of the sod, to their completion, from which we take the following extract:—

"The work of levelling up the ground was started in July, 1908. The foundation work of the Locomotive and Machine Shop and the Smith Shop was commenced in the following November. The erection of the steel structures for these shops was started in May of the following year and progressed satisfactorily.

"In January 1910, I was sent to England to place orders for the building materials for the remaining 8 large and 5 small buildings, and their main equipments.

"These materials were forwarded to Dairen with the utmost despatch, the first delivery arriving on board the S.S. "Promosius' in May of that year. The delivery was accomplished by 20 boats, the last of which arrived in August of 1911.

"The foundations for these buildings were laid down consecutively, the first being started in June and the last in December. It is a noteworthy fact that this foundation work was carried on through the rigour of winter, without a break—an unprecedented feat in this country, where the generally accepted idea has hitherto been that such foundation work could not be carried out during the winter months.

"Temporary stoppages were made in the progress on certain days when the work was threatened by an unusually severe frost, in order to cover up and protect the work.

"One by one the structures for the buildings were erected, beginning in August of last year (1910); as progress was made with each building, its equipments were installed.

"The whole enterprise was completed towards the end of last month (October 1911). The total expenditure was Gold Yen 4,387,437.017.

The Administration Building and Offices.

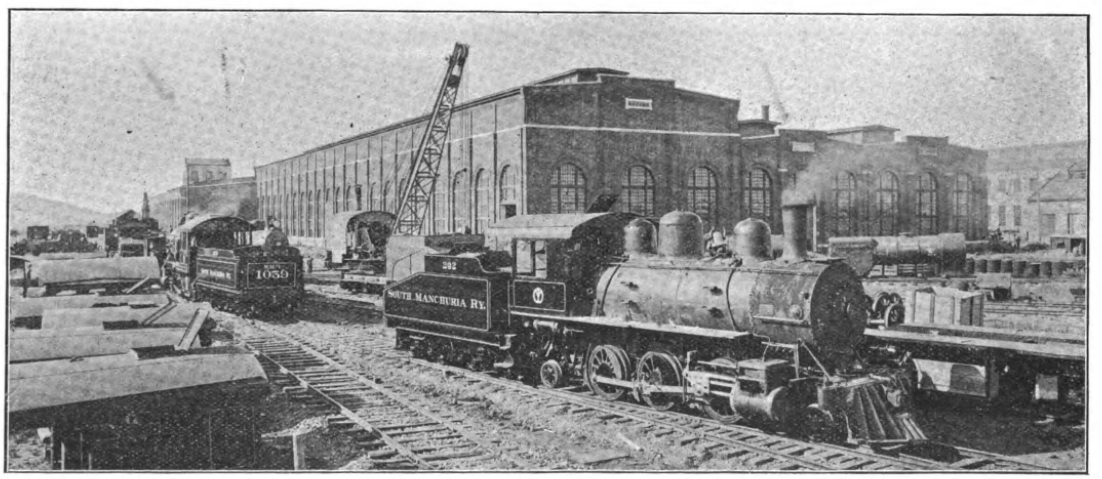
4 miles from Dairen (the starting point of the South Manchuria Railway) adjacent to the main line.

The area of the total enclosure of workshops and colony, is about 400 acres.

The workshops are laid out over an area of about 200 acres; the gross total area of the workshop buildings being a little less than 11 acres.

The Lay-Out comprises: — Locomotive and Machine Shop, Boiler Shop, Smith Shop, Foundry, Pattern Shop and Pattern and Foundry Stores, Power House, General Stores, Oil and Rubber Stores, Truck, Wheel and Brake Shop, Wood Mill and Freight Car Shop, Cabinet, Upholstering and Passenger Car Shop, Paint Shop, Timber Store, Timber Drying Kiln, Train Lighting Equipment Repairing House, Cleaning Pit House, Locomotive Weighing and Preparation Shed, Testing Laboratories, Fire Brigade and Night Watch's Station, Pumping Station, a 70 ft. Turntable, a 75 ft. Traverser and the General Office.

The Colony covers an area of about 200 acres. There have been built, 695 houses for the staff and workpeople employed at the workshops, 12 houses for the use of tradesmen, a Hospital,



View of the Workshops.

"The capacity of the completed workshops is such as to deal, at any one time, with the repair of about 27 Locomotives, 36 Carriages, and 130 Goods Cars.

"Even at this early date, there has already been made and turned out, a total of 3 First-Class and Dining Cars, 3 First-Class and Baggage Cars, 3 Baggage and Mail Cars for use on the Mukden-Corean Express Mail Train service and 17 Tram Cars, while 3 Sleeping Cars are at the present moment fast approaching completion."

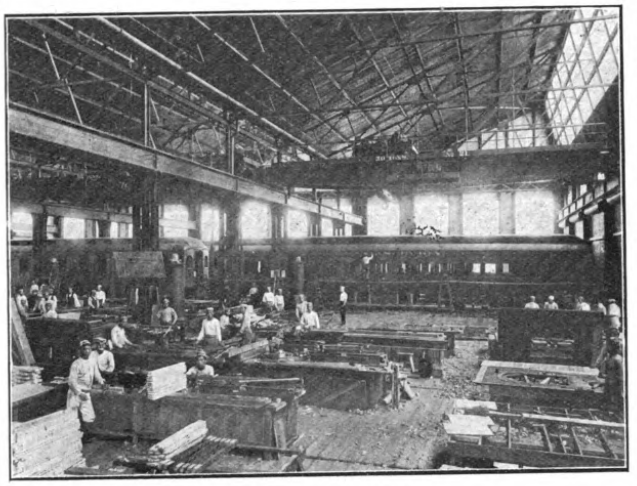
The Workshops and Colony are situated at Shakako, about

Children's School, Post and Telegraph Office, 3 small Public Baths and a Club-House.

All houses are lighted by electricity, and the better class houses have a hot water heating system installed. The water supply and drainage system has received careful attention, and has been well carried out.

The Electric Tramway from Dairen extends through the main road of the Colony, with its terminus in front of the main office building.

The Colony has a population, of about 2,600 Japanese.



The Passenger Car Shop.

and Rubber Store is built close to the south end of the General Stores.

To the west of the General Stores, and 100'-0" from it, is the Air-Brake, Wheel and Truck Shop with its south end in line with the south ends of the General Stores and Locomotive and Machine Shop. In the same line, 70'-0" to the west of the Air-Brake, Wheel and Truck Shop, is situated the Wood Mill and Freight Car Shop.

The 70'-0" Turntable is placed outside the north-east corner of the Locomotive and Machine Shop in a line with the northernmost of the Twenty-two Repairing Pits. The Locomotive Weighing and Preparation Shed is 417'-0" to the north of the Turntable.

The Pumping Station is located in an isolated position to the south-east of the Paint Shop.

The plan on page 87 shows the grouping of the workshops.

Construction of Buildings.—The Locomotive and Machine Shop, the Boiler Shop and the Smith Shop are each built of a steel skeleton structure with steel roof trusses, enclosed in independent brick walls.

The General Stores, Foundry, Pattern Shop and Pattern and Foundry Stores, Power House, Paint Shop, Cabinet, Upholstering and Passenger Car Shop, Wood Mill and Freight Car Shop, Air-Brake, Wheel and Truck Shop, Cleaning Pit House, Locomotive Weighing and Preparation Shed, Testing Laboratories and Fire Brigade and Night Watch's Station are built of steel skeleton structures with steel roof trusses. Their sides and ends are covered with a double thickness of corrugated galvanized sheet iron, 18 W.G. thick, laid with one corrugation side lap and 6 inches and lap, with rivetted fastenings. The air space which is left between the thicknesses, contains a layer of Bituminous Hair Felting, in order to maintain the buildings, as far as possible, cold-proof.

The building materials for the General Stores, Foundry, Pattern Shop and Pattern and Foundry Stores, Paint Shop, Cabinet, Upholstering and Passenger Car Shop, Wood Mill and Freight Car Shop, Air-Brake, Wheel and Truck Shop and the Boiler Shop were entirely supplied by Craven Bros. Ltd., Manchester, England. The materials for the Power House, Cleaning Pit House, Locomotive Weighing and Preparation Shed, Testing Laboratories, Fire Brigade and Night Watch's Station were supplied by the Patent Shaft and Axletree Co., Ltd., Wednesbury, England.

The roofs of the two latter groups of buildings are covered with 1¼" grooved and tongued Oregon Pine boards, upon which is placed one thickness of Crave's Patent Roofing Sheet, well nailed down and finished with a coating of mastic compound, spread over with fine sand.

The skylights are of Mellowes' Patent "Eclipse" type lead covered steel bars, manufactured by Mellowes & Co., Ltd., Sheffield. They are glazed with rough cast glass, ¼ inch thick, and provided, wherever necessary, with double flat ventilators fitted with Leggott's "Silens" opening gear.

The window sashes are the latest type "Fenestra" steel section, of the Critall Manufacturing Company. Each sash is provided with a ventilation area. All sashes over the doorway are fixed.

The lantern sashes in the Foundry, Boiler Shop and Power House are provided with opening gear, worked from the ground. All the sashes are glazed with ¼ inch rough cast glass.

Each of the aforementioned buildings, with the exception of the Cleaning Pit House, is provided with its own sanitary arrangements, which are accessible only from the interior of the building. The urinals and latrines were manufactured by Morrison, Ingram & Co., Manchester.

All the above buildings, with the exception of the General Stores, are fitted with Kinnear's Patent Roller Shutter Metal Doors, manufactured by A. L. Gibson & Co., London. In some cases additional sliding fire-proof doors are provided in the sides of the building. The General Store is fitted throughout with sliding fire-proof floors, provided with small wicket doors.

The skeleton steel structures for the Locomotive and Machine Shop and the Smith Shop were supplied by The Morgan Engineering Co., Ohio, U.S.A.

The roofs of these buildings are covered with groved and tongued Oregon Pine boards 1¼" thick, and laid with four thicknesses of tarred felt, cemented with molten pitch and well nailed down to the roof boards. Finally a coating of molten pitch was uniformly spread over the felt and covered with gravel sand.

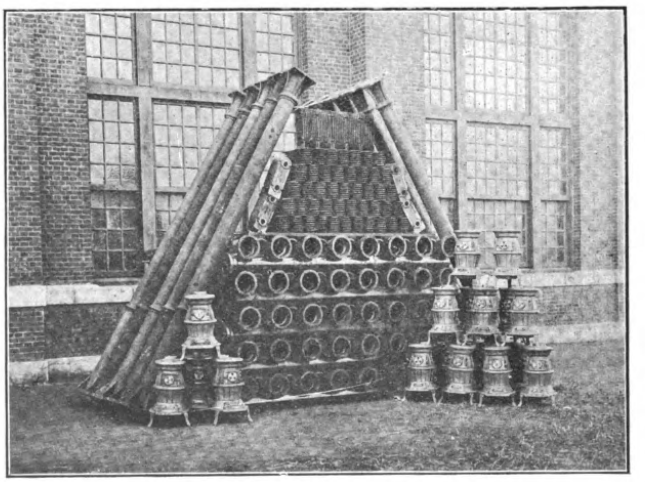
The skylights for these two buildings are made of galvanized metal bars, glazed with wire glass ¼ inch thick.

The window sashes are made of wood fitted in wooden frames in the brick walls. All the side and end windows are made with their lower one-third area to open upwards, with the provision of balancing weights.

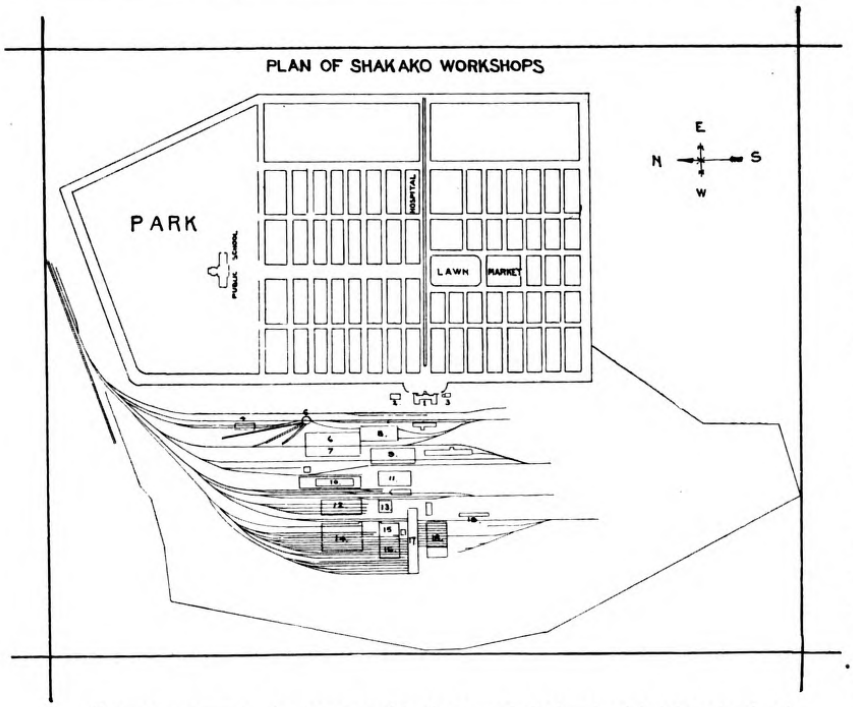
The lantern sashes are made in a similar way to the window sashes, and are provided with opening gear worked from the floor. This opening gear was manufactured in the workshops themselves. The sashes are glazed with ¼ inch wired glass.

The doors are the aforementioned Kinnears's Patent Roller Shutter Metal Doors; some of them being provided with wicket floors. In the case of the Locomotive and Machine Shop there are also two wooden doors in the East wall, and one similar door in the West wall.

The Timber Drying Kiln, Train-Lighting Equipment Repairing House, and the Oil and Rubber Stores are built of brick walls with wood roof trusses. The roofs are covered



Examples of foundry work.



This plan shows in the upper portion the town built by the Administration for the Workshops employees. A tram line, connecting with the main Dairen service, runs through the centre of the town. The key to the plan is as follows 1.—Administration Building, 2.—Testing Laboratory, 3.—Fire Brigade, 4.—Locomotive Weighing Shop, 5.—Turntable, 6.—Engine Repair Shop, 7.—Machine Shop, 8.—Boiler Shop, 9.—Smith Shop, 10.—General Stores, 11.—Foundry, 12.—Air Brake and Truck Repair Shop, 13.—Power House, 14.—Wood Mill and Freight Car Repair Shop, 15.—Cabinet Shop, 16.—Passenger Car Shop, 17.—Transfer Table, 18.—Paint Shop, 19.—Timber Store.

Ground Plan of the Workshops.—For so large a plant, the arrangement is very compact. The plan has been so drawn up as to group work of a similar character together, in order to minimise the distance through which materials and parts must be carried. Care has also been taken to provide everywhere for straight line movement of materials.

The buildings are spaced a sufficient distance apart to allow of good natural lighting.

The General Office is in the fore-ground of the lay-out, with its frontage east, and opposite the end of the main road through the Colony. The Testing Laboratories are 110′-0″ to the north of the General Office, and the Fire Bridage and Night Watch's Station is 70′-0″ to the south. The entrance for the workpeople is through turnstiles situated between the General Office and the latter station.

The Locomotive and Machine Shop is situated at the northeast corner of the group. The Boiler Shop is behind this at its south-east end, its main bay forming a continuation of the Locomotive Shop. The Smith Shop is 60′-0″ west of the Boiler Shop, and 80′-0″ south of the Machine Shop.

The Foundry is 60′-0″ west of the Smith Shop, the Pattern Shop and Pattern and Foundry Stores being adjacent at its southwest corner.

The Power House, which is situated in a central position to the entire lay-out, is 115′-0″ west of the Foundry, and has its north end in line with the north end of the Foundry.

The Cabinet, Upholstering and Passenger Car Shop is 90′-0″ to the west of the Power House, with its north end in line with the north ends of the Power House and Foundry.

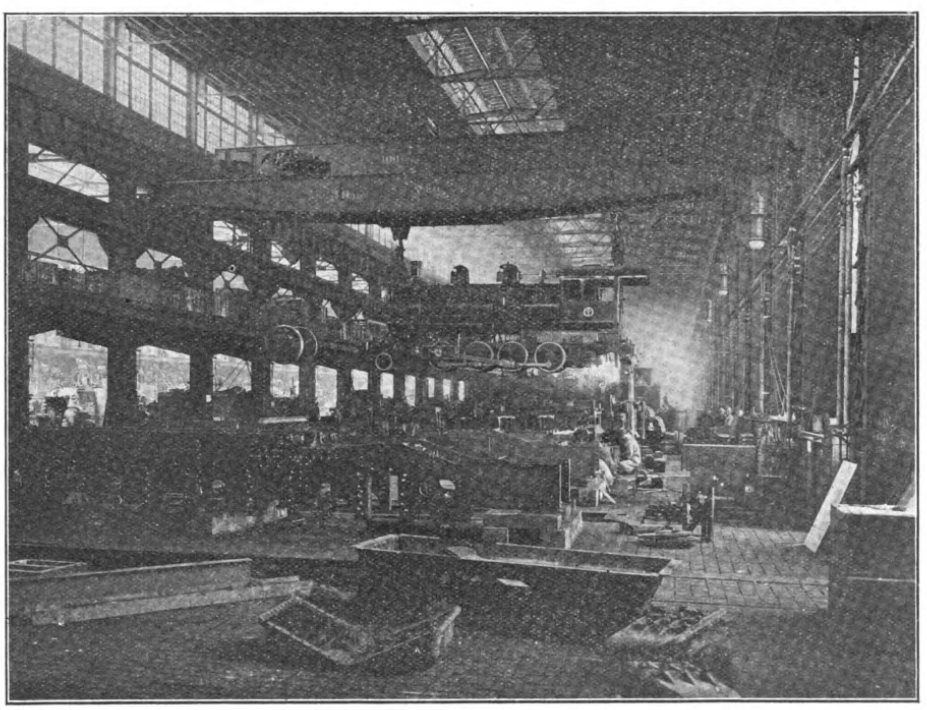
The Paint Shop is 220′-0″ south of the Cabinet, Upholstering and Passenger Car Shop. The Timber Drying Kiln is situated 54′-5″ to the east of the Paint Shop, in line with its north end.

The Electric Train-Lighting Equipment Repairing House is built close up to the south end of the Passenger Car Shop.

The 75 ft. Traverser operates between the Passenger Car Shop and the Paint Shop, and is also available for the Timber Drying Kiln, and the Train-Lighting Equipment Repairing House.

The Cleaning Pit House is situated to the west of the north end of the Locomotive and Machine Shop.

The General Stores is 180′-0″ west of the Locomotive and Machine Shop, with its south end in line with the south end of the latter. The Oil



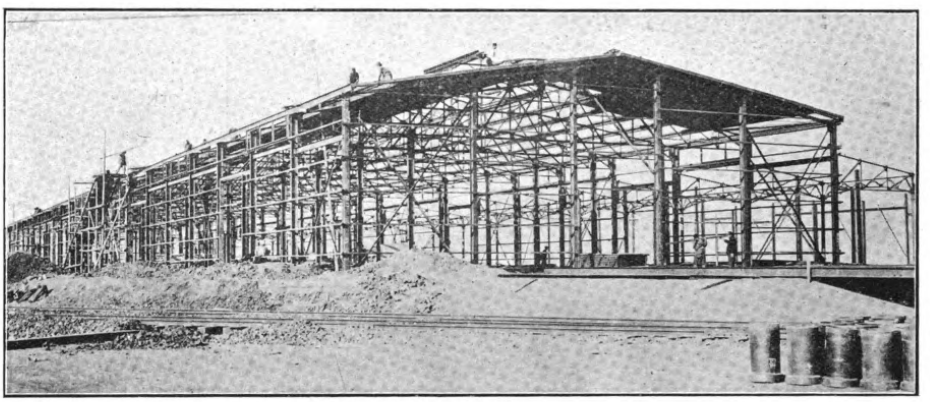
The Engine Shop.

with ½ inch thick boards and one thickness of "Malsoid" roofing sheet. The windows have wooden sashes, glazed with common glass.

The Timber Drying Kiln has wooden doors and the other two buildings patent folding metal shutter doors.

Finally there are three smaller buildings; one built of wood and covered with corrugated sheeting, is used as the Timber Store, and two with wooden structures and corrugated sheeting walls and roof, one used as an auxiliary store and the other as the Workmen's Messroom.

Lighting.—The Lighting of all the workshops and the yard is accomplished by the lamps enumerated in the table below. The lamps are lighted by 25 cycle 100 volt alternating current transformed from the 2,100 volt main, coming from the Dairen Central Electric Station.



The Store House—now completed.

For the smaller units the Tungsten Filament Incandescent Lamp is used, and for the larger units, the Flame Arc Lamp. All the lamps were supplied by Allgemeine Electricitats Gesellschaft, Berlin.

	Tungsten Lamps 25 c.p.	100 c p.	Flame Arc Lamps 1,200 c.p.	Total K.W.
Loco. Shop...		32	11	8.7
Machine Shop.		86		8.6
Cleaning Shed		—	—	—
Loco. Weighing & Prep. Shed.		13		1.3
Boiler Shop.		18	8	5.8
Smith Shop.		6	18	9.6
Foundry		40	12	10.0
Pattern Shop.		27		2.7
General Stores		16		1.6
Truck Shop.		49		4.9
Wood Mill.		25		2.5
Freight Car Shop. ..		45		4.5
Passenger Car Shop. ..		33		3.3
Cabinet Shop.		18	3	3.3
Upholstery Shop... ..		5	4	2.5
Paint Shop.		48		4.8
Battery House.	3	3		0.4
Timber Drying Kiln. ..		—	—	—
Power House.		49		4.9
Pumping Station.. ..	9	3		0.5
Testing Laboratory. ..		16		1.6
Fire Bridage Station. ..	16			0.4
Switcher's Office. ..	2	3		0.4
General Office.	9	37		3.9
Yard.		29	4	4.9
Total:	39	601	60	91.1

Water Supply and Drainage System.—After careful investigation and search for water sources, it was decided to put in an independent water works for the supply of water to the Workshops and Colony.

The Pumping Station is situated at a distance of about 230 yards South West of the Paint Shop. Three wells are sunk in the immediate vicinity of the pumping station, and another about one mile distant. The wells are from 20 to 30 feet in diameter and from 25 to 42 feet deep.

A brick-lined concrete reservoir of 100,000 gallons capacity, consisting of two enclosed cavities measuring 18 feet wide × 40 feet long × 26 feet at the highest point, with an oval top and flat bottom, is built on a hillside in the background. The bottom of the reservoir is 204 feet 6 inches above the ground level of the workshops.

The Pumping Station equipment consists of:—Two sets of Rees Roturbo Pumps, each directly coupled to a 60 B.H.P. 3-phase motor for 220 volts 25 cycle A.C., with a suitable special double automatic liquid starter; both are mounted on a combination baseplate: one set of lightning arresters, two 50 K. V. A. unity - power-factor transformers, to transform 2,100 voits supply current to 220 volts, two high tension oil interrupters, two long tension interrupters, an electrically operated reservoir water level recorder, and all usual equipments mounted on switchboards.

The speed of the motors is rated at 1,440 revolutions per minute, and each pump is capable of delivering a maximum quantity of 400 gallons of water per minute, against a maximum total head of 275 feet, including suction and the pipe friction.

There are, on higher levels, a settling reservoir measuring 40 feet diameter × 14 feet deep (working depth), and filter bed measuring 60 feet × 90 feet × 8 feet deep (working depth). The bottom of the former is 28 feet 5 inches above the ground level of the workshops, and that of the latter is 16 feet 9 inches. Water pumped into the settling reservoir passes, by gravity, into the filter bed, and from there into a supplementary reservoir well, sunk close to the pumping station.

One of the Rees Roturbo Pumps described above, is used for pumping, through 6 inch piping, water from the supplementary reservoir well into the main reservoir, from whence it is supplied to the workshops and colony through an 8 inch main.

Waste waters from the different workshops are discharged, through glazed earthenware pipes, ranging from 4 inches to 18 inches in diameter, and are collected in a series of manholes connected by a main drain, 24 inches in diameter, discharging into an open gutter running along the eastern boundary of the work's enclosure.

Surface water, resulting from rainfalls, is also drained into the manholes above mentioned. Waste water from the houses in the Colony is similarly disposed of by underground drainage, and discharged into the same open gutter.

The building of a septic tank is under consideration, in order to improve the existing sanitary arrangements.

Suppliers of Equipment.—The following firms are the suppliers of the principal Machine Tools and various Equipments to Shakako Works.

(a) Locomotives and Machine Shop Machinery and Equipment.—Sir G. W. Armstrong, Whitworth & Co. Ltd., Alfred Herbert Ltd., Henry Broadbent Ltd., Joshua Buckton & Co., Ltd., J. Butler & Co., Francis Berry & Sons, Craven Bros., Ltd., Darling & Seller Ltd., George Swift & Sons, Hulse & Co., Ltd., Kendall & Gent Ltd., Luke & Spencer Ltd., William Muir & Co., Ltd., Maud & Turner, Beyer, Peacock & Co., Ltd., J. Perkinson & Son, Smith & Coventry Ltd., Sharp, Stewart & Co., Ltd., H. W. Ward & Co., Ltd., S. Worssam & Co., The American Tool

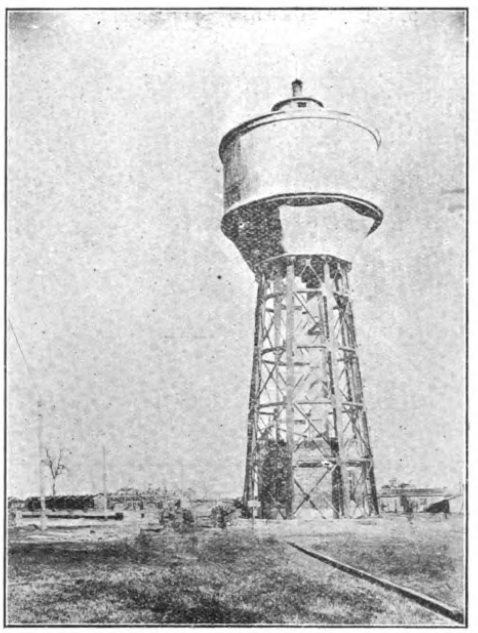
Works Co., The Acme Machinery Co., B. F. Barnes Co., The R. K. Le Blond Machine Tool Co., Brown and Sharp Manufacturing Co., Cambersburg Engineering Co., Curtis & Curtis Co., Flather Co., The Walter H. Foster Co., Hilles & Jones Co., Heald Machine Co., Niles-Bement-Pond Co., Putnam Machine Co., Petter & Johnston Machine Co., William Sellers & Co., Smith & Mills, Steptoe Shaper Co., Wiley & Russel Manufacturing Co., Wells Bros. Co. and J. E. Reinecker.

(b) Hydraulic Machinery.—Fielding & Platt Ltd.

(c) Wood-Working Machinery.—A. Ransome & Co. Ltd. and Thos. Robinson & Son Ltd.

(d) Boiler Shop Machinery.—Alldays & Onions Pneumatic Engineering Co. Ltd., B. F. Barnes Co., Francis Berry & Sons Ltd., Joshua Buckton & Co., Ltd., Campbells & Hunter Ltd., The Chicago Pneumatic Tool Co., Cleveland Punch & Sheer Works Co., Walter H. Foster Co., Greenwood & Batley Ltd., Alfred Herbert Ltd, James Keith & Blackman Co., Ltd., Kendall & Gent Ltd., Muenneth u. Knoechel, Luke & Spencer Ltd., Wm. Muir & Co., Ltd., Henry Pels & Co., Roberts Bros. and Joseph T. Ryerson & Son.

(e) Foundry Machinery and Equipment.—The Consolidated Pneumatic Tool Co., Ltd., Craven Bros., Ltd., James Evans & Co., Green & Co., J. W. Jackman & Co., Ltd., G. Kite & Co., The London Emery Works Co., The Morgan Crucible Co., Ltd., The Pneumatic Engineering Appliances Co., Ltd., Wm. Sellers & Co., Thwaite Bros. Ltd. and Whiting Foundry Equipment Co.



Water Tank.

(f) Smith Shop Machinery and Equipment.—Alldays & Onions Pneumatic Engineering Co., Ltd., The Ajax Manufacturing Co., Babcock & Wilcox Ltd., Brett's Patent Lifter Co., Ltd., Cochran & Co., Annan Ltd., Craven Bros., Ltd., Fielding & Platt Ltd., Henschel u. Sohn., James Keith & Blackman Co., Ltd., B. and S. Massey, Mitsubishi Dockyard & Engineering Co., Wm. Muir & Co., Ltd. and National Machinery Co.

(g) Wheel, Brake and Truck Shop.—The Acme Machinery Co., Alldays & Onions Pneumatic Engineering Co., Ltd., B. F. Barnes Co., Joshua Heap & Co., Ltd., James Keith & Blackman Co., Ltd., Kendall & Gent Ltd., B. and S. Massey, Wm. Muir & Co., Ltd., Walter Newbolds & Co., Ltd., Niles-Bement-Pond Co., Smith & Coventry Ltd., Wells Bros. Co. and Westinghouse Air Brake Co.

(h) Dynamo Engines, Generators, Air Compressor, Motors and Electric Equipments.—Allgemeine, Electricitats Gesellschaft, Bellis & Morcom Ltd., Dick, Kerr & Co., Ltd., Felten u. Guilleaume, General Electric Co., General Electric Co., Ltd., Greenwood & Batley Ltd., Ingersoll-Rand Co., Lancashire Dynamo & Motor Co., Ltd., Laurence, Scott & Co., Ltd, Mather & Platt, Ltd., Mitsubishi Dockyard & Engineering Works, Shibaura Engineering Works, Veritys Ltd., Vickers, Sons & Maxim Ltd. and Westinghouse Electric and Manufacturing Co.

(j) Boiler Plant. — Babcock & Wilcox.

(k) Pumping Plant.—The Rees Roturbo Manufacturing Co., Ltd.

(l) Stanlock Heating System.—Standard Engineering Co., Ltd.

(m) Automatic Sprinkler Installation.—Mather & Platt, Ltd.

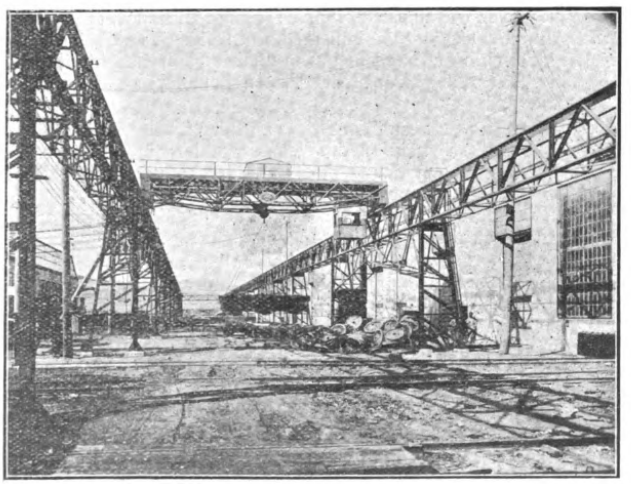
(n) Cranes, Lifts, Conveyors, Turntable and Traverser.—Babcock & Wilcox, Ltd., G. Booth & Sons, Ltd., A. Borsig, Brown Hoisting Machine Co., Cowan Sheldon Ltd., Craven Bros., Ltd., Herbert Morris & Bastert, Ltd., Patent Shaft & Axletree Co., Ltd., A. W. Penrose & Co., Ltd., Ransomes & Rapier, Ltd., Shaw Electric Crane Co. and Stothert and Pitt, Ltd.

(p) Building Material.—Craven Bros., Ltd., Markham & Co., Ltd., Crittall Manufacturing Co., Ltd., A. L. Gibson & Co., Ltd., The Morgan Engineering Co. and Patent Shaft and Axletree Co., Ltd.

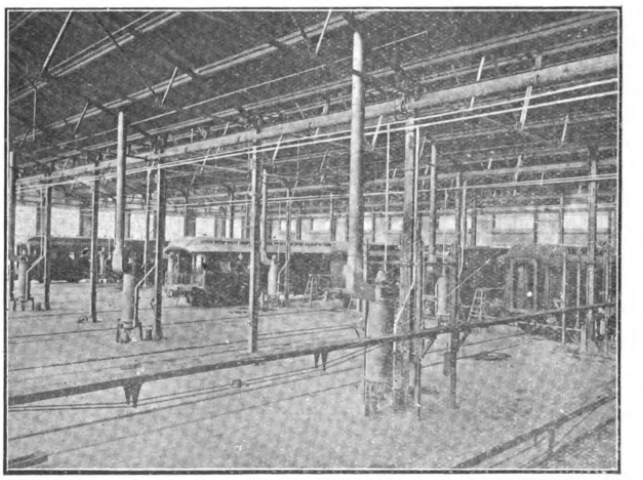
(q) Testing Machinery and Equipment.—W. H. Bailey & Co., Ltd., Joshua Buckton & Co., Ltd., Edward G. Herbert Ltd., Hallwachs u. Co. and Tinius Olsen & Co.

(r) Locomotive Weighing Plant.—W. & T. Avery Ltd.

(s) Miscellaneous.—British Vacuum Cleaner Co. Ltd., W. Canning & Co. (Electro-Plating Plant.) Morison Ingram & Co., Ltd. (Sanitary Arrangements.) Shand Mason & Co. (Fire

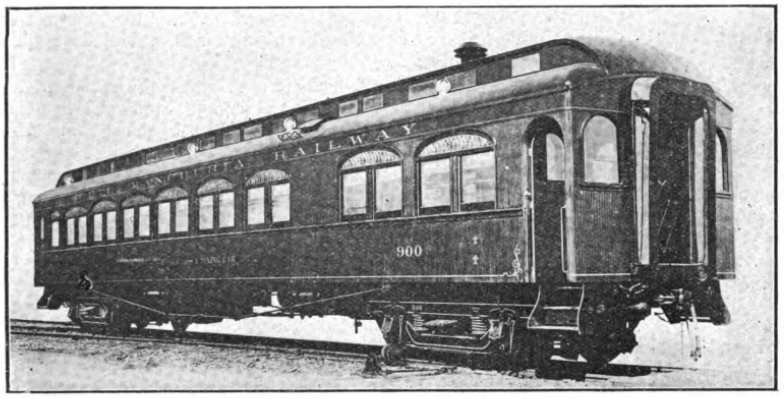


Overhead Traveller.



Paint Shop.

Engine.) Shanks & Co., Ltd. (Sanitary Arrangements.) The Synchronome Co. (Electric Clock System.) Torrance & Sons, Ltd. (Paint Mill.) The Valor Co., Ltd. (Oil Cabinet.) Rud., Otto Meyer. (Office Heating.)



Cranes and other Lifting and Conveying Appliances.—The conveyance of heavy articles, both indoors and outdoors, has received special attention and has been carried out in a most thorough and complete manner. The Overhead Crane System forms one of the most noticeable features of the workshops.

Full details of the Cranes, Conveyors and other Lifting Appliances may be gathered from the following table.

From the table showing the distribution of electric power in the different workshops, the following data have been deduced:—

	Total rated H. P. of motors used for power.	Approximated rated H.P. of motors per 100 sq. yards of floor area.	Rated H.P. of motors per workman employed.
Locomotive Shop.	408	118	3.264
Machine Shop.	632	107	2.603
Boiler Shop.	416	105	1.524
Smith Shop.	138	29	1.190
Foundry.	226	65	1.467
Pattern Shop.	36	51	1.800
Truck Shop.	255	60	2.040
Wood Mill.	310	145	5.167
Freight Car Shop.	114	20	0.648
Passenger Car Shop.	253	50	1.571
Paint Shop.	9.	2	0.128

The men employed, including both Japanese and Chinese workmen, who were present on December 21, 1911, totalled 1,665. The total rated horse power of motors installed throughout the workshops, is 2,907.5. By dividing the latter by the former, the average rated H.P. per workman employed, is 1,746.

The Power Plant.—The Boiler Plant was completely supplied by Babcock & Wilcox, Ltd., London. It consists of three batteries of water tube boilers, the particulars of which are as follows:—

Heating Surface	4,400 sq. ft.	each.
Grate Area (8'-0" × 12'-0")	96 sq. ft.	each.
Number of Sections	18	each.
Number of tubes in each section	11	
Diameter of tubes	4 inches.	
Length of tubes	18 feet.	
Steam and Water Drum { Diameter	4 feet.	
Steam and Water Drum { Length	24 feet 3 inches.	
Diameter of Stop Valve	7 inches.	
Working Pressure	150 lbs. per sq. inch.	

Each boiler is fitted with Babcock & Wilcox's patent Integral Superheater, each having 552 square feet of heating surface, consisting of 64 "U" tubes 1¼ inch diameter, and suitable for imparting 100 degree Fahrenheit of superheat to the steam generated in the boiler.

Babcock & Wilcox's patent Chain Grate Stoker is fitted to each boiler, each having a grate area of 96 square feet. A line of 3 inch shafting, driven, by an 8. H.P. motor, through an entirely enclosed worm reducing gear in an oil bath, transmits the motion to each individual grate, by means of a chain drive.

The speed of the motion of the grate can be varied from 6¼ feet to 25 feet per hour while the driving shaft is running at 50 revolutions per minute.

Five groups of Green's Patent Fuel Economiser, consisting of a total of 720 tubes, each tube 9 feet long and $4\frac{9}{16}$ inches in diameter, are fitted in the main smoke flue leading to the chimney, in a position between the boiler batteries and the partition wall. Two motors 2 H.P. and 1½ H.P. respectively, drive the selfacting triple scrapers.

There are three "Weir" vertical direct acting boiler food pumps, one having 9" water ram, 12" steam cylinder and 21" stroke, and the two others 8" water ram, 10" steam cylinder and 18" stroke.

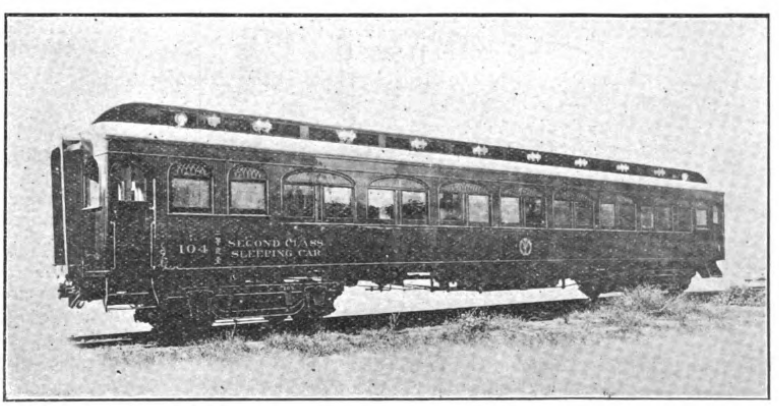
The chimney for the boiler plant is of the self-supported type, built of steel plates and standing upon a brickwork base. The diameter at the top is 9 feet, and at the bottom 16 feet, the chimney being coned for a distance of 20 feet from the base. The length of the steel part of the chimney is 150 feet, and the total height above ground is 157 feet.

The delivered coal drops into a receiving hopper, and then passes through a simplex valve into the automatic filler, and fills ihe buckets of the endless chain-bucket coal conveyor. It is then dumped from there into any of the six overhead coal bunkers in the boiler plant, from whence it is fed to the coal receiver for each grate, by the working of a pull chain,.

The ashes are raked to the front of the boilers, shoveiled, through the openings in the foot plate, into the buckets (as they pass the ash trench), by which they are raised and dumped into the ash bunker outside the boiler plant.

The coal conveyor is capable of handling about 20 tons of coal per hour, with a chain speed of 45 feet per minute; each bucket having a capacity of about one cubic foot. The conveyor is operated by one 3½ H.P. motor.

The coal receiving hopper, which has a capacity of about 10 tons, is covered with a grid having 3 inch square spaces.



The aggregate storage capacity of the overhead coal bunkers, heaped, amounts to about 380 tons, and that of the ash bunker, heaped, about 40 tons.

The main steam pipe—10" diameter—is arranged in the Engine Room running along the partition wall, and is connected with each boiler by 7" diameter piping.

In the Engine Room there are installed,—two sets of Steam Engines directly coupled to 400 kilowatt dynamos, two sets of 250 kilowatt Motor Generators, one Air Compressing Engine and one Fire Service Pump (described under the heading "Fire Protection").

The steam dynamos were supplied by Bellis & Morcom Ltd., Birmingham, and by Dick, Kerr & Co., Ltd., Preston.

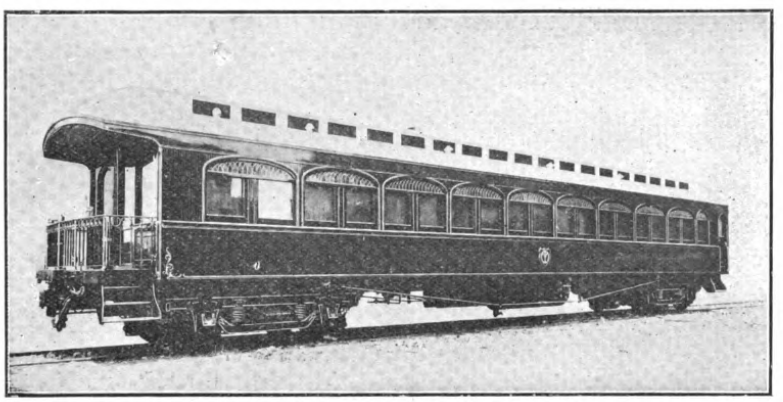
The Engines are Compound Two-Crank Two-Cylinder Vertical Enclosed Double-Acting Self-Lubricating High Speed Non-Condensing type, with high and low pressure cylinder diameters, 19 inches and 27 inches respectively, and 12 inches of stroke. They are capable of giving an output of 570 B.H.P., working at 575 revolutions per minute and 150 lbs. per sq. inch pressure.

The steam consumption per B.H.P. per hour under the above mentioned conditions, subject to the steam being superheated to 466° Fahrenheit at the engine throttle valve and non-condensing exhaust, is estimated at 18.1 lbs.

The Dynamos are Compound Wound Direct Current type, capable of giving an output of 400 kilowatts at 250 volts, 375 revolutions per minute.

The Motor Generator sets were manufactured by Shibaura Engineering Works, Tokyo, Japan. Each unit consists of one 370 B.H.P. 2,000 volts, Three-Phase, 25 Cycle Induction Motor coupled to two 125 kilowatt 250 volts Compound Wound Direct Current Dynamos, at each end of the same shaft.

Three sets receive the current from the Central Electric Station at Dairen, and, when the dynamos are worked in series, supply power to that portion of the Tramway System which lies South West of the Chinese town of Shokoshi; i.e., the tramways from Shokoshi to Shakako and to the seaside resort of Star Beach (Hoshigaura), and, when worked in parallel, supplement the workshop power.



Special Saloon Car.

When only a smaller power is wanted in the workshops, e.g., in the case of overtime work being carried on of an evening in a part of the shops, one of these 250 kilowatt motor-generators is operated, to economise the supply of power.

The switch boards, which are fitted along the West wall of the engine room, consist of:—

2 panels for the steam dynamo sets.
13 panels for the shop feeders.
6 panels for the motor-generators.
2 panels for the traction feeder.

The panels are adequately and completely equipped with all necessary equipments in accordance with the most modern practice.

The Air Compressing Engine was built by the Ingersoll-Sergeant Drill Co., New York. It is the Duplex Compound Steam and Compound Air Non-condensing type, with intercooler

It has:—High Pressure Steam Cylinder	diameter 16 inches.
Low Pressure Steam Cylinder	diameter 24 inches.
High Pressure Air Cylinder	diameter 14¼ inches.
Low Pressure Air Cylinder	diameter 22¼ inches.
Stroke	18 inches.

It is capable of compressing air to 100 lbs. per square inch pressure at 80 to 100 lbs. pressure of steam; and, when operating at 120 revolutions per minute, it will have a piston displacement capacity of 925 cubic feet of free air per minute and with terminal air pressure of 100 lbs. per square inch, it will develope about 157 I.H.P. in its steam cylinders.

The Steam Generation is sufficient to cover the supplies to the above mentioned steam engines, the 325 "Stanlock" heater units (described under the heading "Heating System"), and to the steam hammers in the Smith Shop. For the two last named purposes, an underground closed main duct extends from east to west between the two groups of workshop buildings, viz.—The Freight Car Shop, Truck Shop, General Stores and Machine and Locomotive Shop on the north side, and the Passenger Car Shop, Power House, Foundry and Smith Shop on the south side. The separate buildings are reached by branch ducts from this main.

The greatest diameter of the steam main outgoing from the Power House is 9 inches, and that of the incoming return main, for the water of condensation, is 4 inches. Expansion bends are well provided throughout the pipings, and a gate valve is provided for each building, in order that the supply may be cut off from any building whenever desired.

These underground ducts also serve for the distribution of the Automatic Sprinkler Supply and Compressed Air Supply pipings; the latter having a main of 6 inch Mannesman tubes, and thereby being branched off to the several buildings.

The Power Supply throughout the whole workshops, as may be seen from the foregoing descriptions, is by 250 volts direct current, and all the electric motors are wound for 220 volts direct current, without exception.

Traverser. — The Traverser, which operates between the Passenger Car Shop and the Paint Shop, was built by Ransomes & Rapier Ltd., Ipswich, England. It is very strongly built, and capable of moving a sleeping car weighing 60 tons, at traversing speed of 150 feet per minute.

The following particulars may be worthy of mention:—

Length of Traverser Pit	521	feet	9	inches.
Width of Traverser Pit	75	,,	2	,,
Length of Traverser Table	75	,,	0	,,
Width over the ends of cross girders	18	,,	5	,,
Width of Platform	15	,,	0	,,
Wheel Base, Crosswise	12	,,	6	,,
Wheel Base, Lengthwise pitch	9	,,	1½	,,
Total Distance of Travel	502	,,	0	,,
Depth from Rail on Traverser to Pit Rail			9	,,
Number of Pit Runway Rails			9	
Number of Carrying Wheels			18	

The Traverser is driven by a 40 B.H.P. motor running at about 400 revolutions per minute. The motor and the mechanism are completely encased in a corrugated sheet iron house.

The current is collected from overhead wires by means of a steel tube collector pole and rigid arm collector fitted to one end of the traverser, the wires being about 18 feet above rail level. The overhead wiring is carried by seven poles and arms.

The engine is capable of pumping 150 gallons of water per minute, throwing a $1\frac{3}{8}$" jet to a height of 130 feet.

Heating System.—Each workshop, with the exception only of the Smith Shop, Cleaning Pit House, Locomotive Weighing and Preparation Shed and Power House is adequately equipped with a heating installation.

The system of heating used throughout, is the "Stanlock" Heating System, of the Standard Engineering Company, London, and is so calculated in each shop, as to maintain an internal temperature of 60° Fahrenheit, even when the external temperature is 10° below Zero Fahrenheit.

Each "Stanlock" unit consists of a nest of solid drawn steel tubes, screwed into a circular cast iron chamber. The former is encased in a cylindrical sheet metal wall, and the latter is connected with a steam supply pipe, an outlet for the water of condensation and a drain cock.

The water of condensation is collected in a steam trap and returned to the Boiler Plant by the action of the live steam pressure.

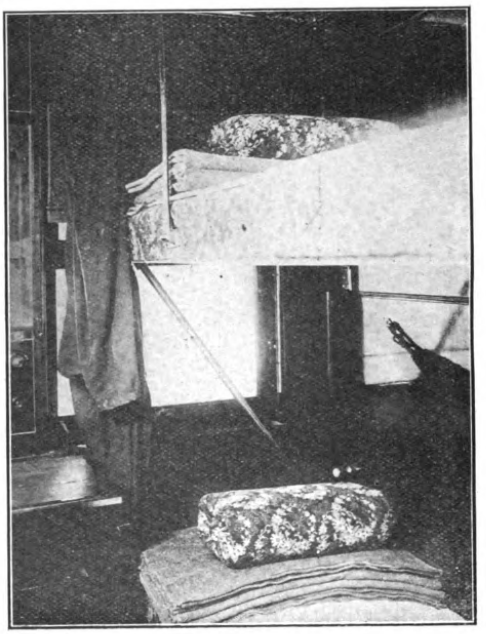
On the top of each such "Stanlock" unit, an electrically driven fan is fitted, driving the cold air into the nest of steam pipes, and expelling the heated air from the bottom opening of the heater.

Buildings.		Size.	Number of units.	Floor Area covered by one Unit. (in square feet)
Locomotive and Machine Shop		1	88	958.6
Boiler Shop.		2	24	1,479.1
Foundry.		2	25	1,248.0
Pattern Shop	Ground Floor.	1	3	2,133.3
	First Floor.	1	3	2,133.3
	Second Floor.	1	6	1,066.6
Paint Shop.		2	35	1,291.4
Passenger Car Shop.		2	34	1,329.4
Freight Car Shop & Wood Mill.		1	53	1,328.3
Truck Shop.		1	32	1,200.0
General Stores.	Ground Floor.	1	8	1,250.0
	First Floor.	1	14	1,285.7
	Total		325	1,475.3

The total steam consumption for heating the shops, as shown in the foregoing table, is estimated at about 43,800 lbs. per hour. The total power for driving the motor fans is reckoned at 38 kilowatts.

The average cost of the installation, per one square yard of the net floor area of the buildings, amounts to, approximately,

Drawing room of special saloon.



Second Class Sleeping Car.

The live steam is supplied at a pressure of about 100 lbs. per square inch.

The steam used for the heating system is supplied, by a system of underground steam mains, from the Central Boiler Plant, the water of condensation being returned thereto.

Each No. 1 unit will condense about 100 lbs. of steam per hour, and each No. 2 unit, about 150 lbs. per hour. The No. 1 unit will circulate about 2,000 cubic feet of air per hour, and the No. 2 unit, about 3,000 cubic feet per hour.

In the Paint Shop, each unit is connected with a fresh air intake pipe, extending through the roof; by means of which a supply of fresh air, to the extent of one change per hour, can be taken in even in the coldest weather. In this case each unit would condense about double the normal quantity of steam shown above.

The various workshops are equipped with the following heating units:—

Gold Yen 4,290. This includes the cost of building outdoor ducts and branches, outdoor steam and return mains and valves, indoor pipings, and connections, and the cost of erection.

The Main Office Building is heated independently of the above mentioned system by means of low pressure steam.

Two Strebel's Sectional Boilers are installed in the basement of the building, each having the following capacity:—

Boiler Heating Surface, 115 square feet.
Water Contents, 96 U.S. gallons.

The boilers are worked at the low pressure of only 1.5 lbs. per square inch.

The steam and return mains are laid in a covered pit, provided in the ground floor.

A novel feature of this heating system is the draining of the steam risers. This is effected by means of special "U" shaped water loops, connecting the bottom of each riser with the return pipe.

50 ton Bottom Dumping Coal Car.

The water of condensation returns to the boilers by gravity.

The total number of radiators is 46, having a total radiating surface of 2,645.5 square feet.

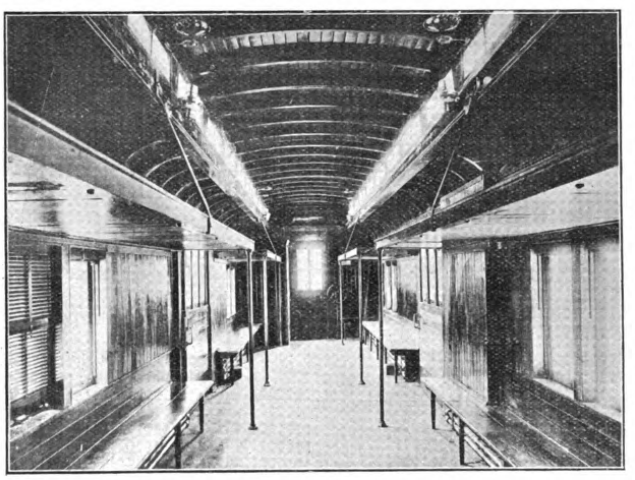
This plant was supplied by Rud. Otto Meyer, Hamburg, Germany.

MACHINES INSTALLED IN THE SHOPS

Locomotive Shop.—2—M.D. Emery Tool Grinders, 1—M.D. Hydraulic Bushing Press, and Cylinder Boring and Valve Seat Facing Tools, worked by Pneumatic power.

Locomotive Weighing and Preparation Shed.—1—Locomotive Weighing Machine with Automatic Aerostatic Dials.

Boiler Shop. — 1 — M.D Plate Edge Planing Machine, 1—M.D. Pel's Punching and Shearing Machine, 3—B.D. Punching and Shearing Machines, 1—M.D. Vertical Plate Bending Roll, 2—B.D. Horizontal Plate Bending Rolls, 1—M.D. High Speed Disc Metal Cutting Machine, 1—M.D. Double Head Tube Plate Drilling Machine, 1 — M.D. Horizontal Boiler Shell Drilling Machine, 1—M.D. Full Universal Portable Radial Drilling Machine, 10—B.D. Drilling Machines (Assorted), 1—M.D. Boiler Tube Cleaning Machine, 1—B.D. Tube Welding Machine with Pneumatic Press, 1—B.D. Tube Sawing Machine, 1—B.D. Tube Cutting Machine, 1—B.D. Break Lathe, 1—B.D. Capstan Lathe, 1—M.D. Emery Tool Grinder, 12—Forge Fires, each with a M.D. Fan, 1—M.D. Smoke Exhaust Fan, 1—Plate Heating Furnace with M.D. Fan, 1—M.D. Hydraulic Power Pump, 1—Hydraulic Accumulator, 1—Hydraulic Flanging Press, 1—Hydraulic Stationary Rivetter, 3—Hydraulic Portable Rivetters, and assorted Pneumatic Tools.



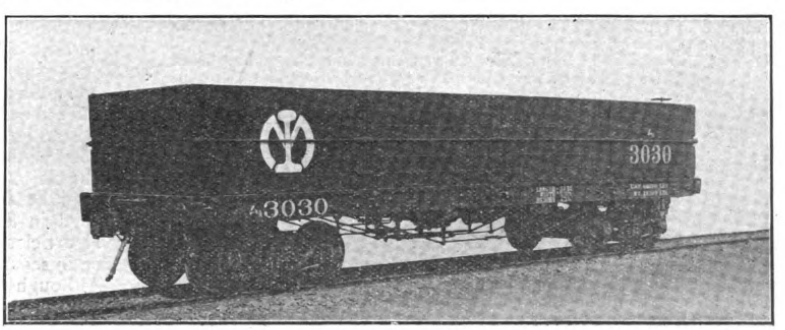
Third Class Car constructed at the Workshop.

Machine Shops.—3—M.D. Wheel Lathes, 1—B.D. Wheel Lathe, 1—M.D. Axle Lathe, 1—M.D. Hollow Mandrel Lathe, 7—M.D. Lathes, (assorted), 45—B.D. Lathes, (assorted), 25—B.D. Drilling Machines, (assorted), 1—M.D. Sensitive Drill, 1—M.D. Automatic Stay Bolt Drilling Machine, 1—M.D. Horizontal Cylinder Boring Machine, 1—M.D. Horizontal Boring, Facing and Milling Machine, 1—M.D. Double Head Vertical Boring and Turning Mill, 2—M.D. Milling Machines (assorted), 5—B.D. Milling Machines (assorted), 4—M.D. Planing Machines, 1—B.D. Planing Machine, 1—M.D. Shaping Machine, 7—B.D. Shaping Machines, 1—M.D. Slotting and Milling Machine, 1—B.D. Slotting and Milling Machine, 3—B.D. Slotting Machines, 5—B.D. Grinding Machines (assorted), 1—B.D. Punching and Shearing Machine, 1—M.D. Automatic Screwing Machine, 7—B.D. Screw Threading Machines, 1—M.D. Bar Reeling Machine, 1—M.D. Centering Machine, 2—M.D. Polishing Machines, 1—M.D. Metal Sawing Machine, 1—B.D. Metal Sawing Machine, 3—M.D. Grinders for Tools and Cutters, 9—B.D. Grinders for Tools and Cutters, 1—M.D. Hydraulic WheelPress, 1—Electric Tool-steel Tempering Furnace, 1—File Sharpener, 4—Copper Smith and Tool Smith Fires with M.D. Fans, 1—M.D. Smoke Exhaust Fan, 1—Electro-Plating Plant, 4 —B.D. Polishing Machines for Electro-Plating Plant and 1—B.D. Band Saw for Timber.

Smith Shop.—2—Scrap Heating Furnaces with each Babcock & Wilcox Water Tube Boilers mounted on top of the furnace, 1—Cochran Vertical Boiler, 7—Miscellaneous Furnaces, 41—Smith Fires, each with M.D. Fan, 6—Steam Hammers (assorted), 1—M.D. Pneumatic Power Hammer, 1—Battery of Steam Drop Stamp Forge, consisting of 3 Heads, 2—Hydraulic Presses, 1—B.D. Bolt and River Heading Machine, 1—M.D. Hot Nut Press, 1—M.D. Duplex Power Press, 1—B.D. Punching and Shearing Machine, 1—B.D. Emery Tool Grinder, 2—M.D. Spring Making Machines, 1—Spring Test Machine and 1—M.D. Smoke Exhaust Fan.

Foundry.—2—Cupolas, 1—Emergency Cupola with M.D. Fan, 1—Tilting Brass Melting Furnace with M.D. Fan, 1—Radio Brass Melting Furnace with M.D. Fan, 3—Mould and Core Drying Chambers, 1—Pipe Core Drying Pit with M.D. Fan, 2—B.D. Root's Blowers, 1—M.D. Scrap Breaking Plant, 1—M.D. Pig Iron Breaking Machine, 4—B.D. Loan Mills, 1—M.D. Sand Mixer, 1—Pneumatic Sand Riddler, 3—Pneumatic Moulding Machines, 1—Portable Mould Dryer with M.D. Fan, 1—M.D. Coke Breaker, 1—M.D. Fettling Machine, 1—B.D. Fettling Machine, 1—M.D. Tumbling Machine and 1—B.D. Tumbling Machine.

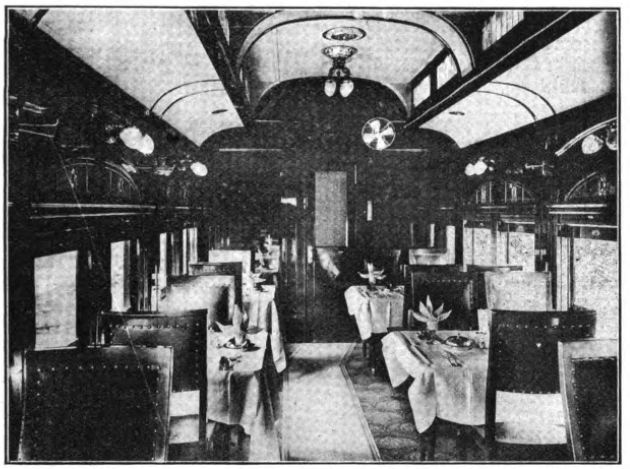
Pattern Shop.—1—M.D. Band Sawing Machine, 1—M.D. Circular Saw Bench, 1—M.D. Planing Machine, 1—M.D. Wood Turning Lathe, 2—Foot Power Wood Turning Lathes, 1—M.D. Fret Sawing Machine, 1—Hand Power Wood Trimmer, 1—Electric Clue Heater, 1—M.D. Dust Collecting Plant and 1—M.D. Ventilating Plant.



30 ton Side Dumping Open Car.

The North and South edges of the Traverser Pit are about 72 ft. 6 ins. distant from the walls of the Passenger Car Shop and Paint Shop respectively.

The Traverser is used for transferring cars between the two abovementioned shops and as a means of communication between the Wood Mill and the Timber Drying Kiln and also for carrying timber to and fromth e timber Drying Shed.



First Class Dining Car.

Locomotive Turntable.—The Locomotive Turntable—at the entrance to the Locomotive Shop—calls for a brief description.

The turntable is of the Shallow Pit type, built up of two inverted fish bellied main girders, and 12 sets of cross girders, braced longitudinally at two intermediate centre lines, coinciding to the centres of the track rails. It is hung to a cast steel centre, which is supported by an intermediate piece provided with 16 conical rollers; the latter is in turn supported by a pivot made of case-hardened steel, set in a heavy cast iron base. The end cross girders each carry two sets of balancing rollers.

The diameter of the table is 70 feet, and the depth of the circular roller track in the pit, is 2 feet 8½ inches below the table track rails.

The turntable was built by The Patent Shaft & Axletree Co., Wednesbury, England.

Fire Protection.—With a view to protecting the valuable property from fire, the Dry Pipe System of the "Grinell Patent Automatic Water Sprinkler," manufactured by Mather & Platt, Ltd., Manchester, has been provided in those buildings where combustible materials or articles are handled or stored.

The plant consists of five installations, as follows:—

General Stores, ...	366	Sprinkler	Heads.
Pattern Shop and Stores ..	202	,,	,,
Paint Shop, ...	471	,,	,,
Passenger Car Shop, ...	517	,,	,,
Freight Car Shop and Wood Mill	710	,,	,,
Total of Sprinkler Heads	2,266		

Each installation is controlled by an alternate Hot and Dry Valve, by means of which the pipes can be filled with water in the summer months, or with compound air in the winter, when water would be liable to freeze.

In the event of an outbreak of fire, the sprinkler head nearest to the seat of the fire, is at once brought into motion by the heat of the fire itself.

The sprinkler heads are all made to fuse at a temperature of 155° Fahrenheit (68° C.). Immediately on the fusing of the sprinkler head, the water in the pipes is released; or in winter, when filled with compressed air, the air pressure is first released, and in its turn admits the water supply to the pipes. The water, passing out of the fused sprinkler head, falls on to the "Spreader" of the sprinkler and is "sprinkled" over a wide area, covering the seat of the outbreak of fire.

Each installation is provided with an automatic alarm gong (fitted on the outside of the building) which operates instantaneously with the fusing of a sprinkler head within the building. In addition, the whole system is connected with an electric alarm attachment and an indicator board, which are installed in the Fire Brigade Station.

The Electric Alarm Attachment operates automatically upon the opening of any sprinkler head throughout the system, and at the same time, the Indicator Board at once shows the firemen the exact location of the outbreak.

Three motor-driven air pumps are provided, for charging the installations with compressed air. These are installed one each in the Pattern Shop Ground Floor, the Wood Mill and the Passenger Car Shop.

There are two sources of water supply, one from the Work's independent water main, the other from a well sunk outside the Power House. One No. 4 side, "Underwriter" Quadruple-Acting Horizontal Steam Pump,—18" steam cylinders, 10" water rams and 12" stroke—installed in the Power Plant, is capable of pumping water at the rate of 1,000 gallons per minute, into a cast iron tank—12'6" × 12'6" × 8'-0"—having a capacity of 7,500 gallons. This tank is placed at the top of a steel structure erected close to the west wall of the Power Plant; the bottom of the tank being 81 feet above the ground.

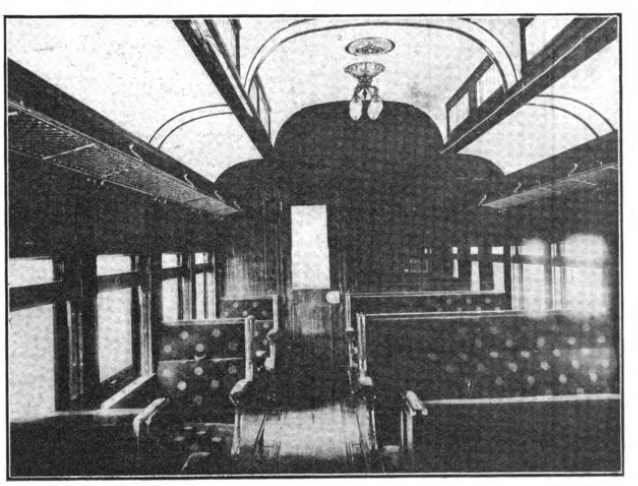
A 6" cast iron main, with branches of 4" pipes, supplies water from the tank to the different installations.

The gross cost of the installation amounts, on an average, to Gold Yen 1.68 per square yard of floor area of the five protected buildings.

One Sprinkler Head covers, on an average, 95.3 square feet of floor area.

In addition, and as an auxiliary to the Sprinkler System, a number of "Minimax" Chemical Hand Fire Extinguishers have been installed in the various shops and in the offices. By means of these, the workmen are able to cope with a fire occurring during working hours, in its incipient stages before the heat is sufficient to bring the sprinklers into action; thus saving water damage.

Each extinguisher is of 2 gallons capacity, and capable of projecting about 14 gallons of effervescing fluid to a distance of 35 feet in any direction.



First Class Passenger Compartment.

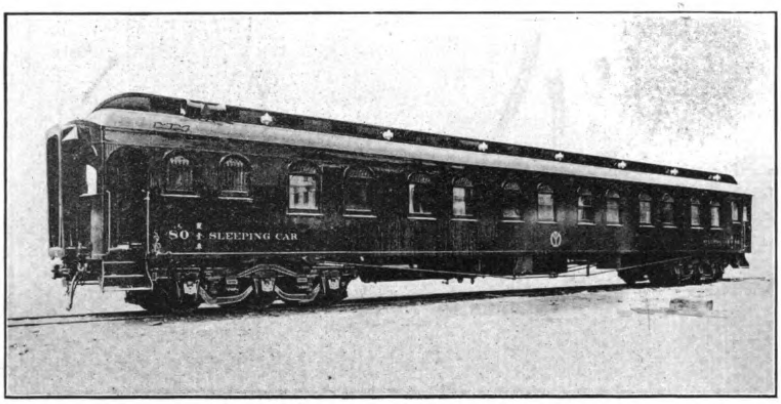
The Fire Brigade Station is equipped with a Light Steam Fire Engine, manufactured by Shand, Mason & Co., London, a two-wheeled Hand Hose Cart and six 100 feet lengths of hose.

Timber Drying Kiln.—1—Triple Duct Drying System, with Fans for Cold Air and Moist Air combined in one shaft, driven by Motor; and a suitable steam Heating Chamber with a Cochran Boiler.

Paint Shop.—1—M.D. Paint Grinding Mill.

Passenger Car Shop, Cabinet Shop and Unholstering Dept.—1—Steam Veneer Press, 1—M.D. Band Sawing Machine, 1—M. D. Circular Saw Bench, 3—M.D. Planing Machines, 1—M.D. Boring Machine, 1—M.D. Tenoning Machine, 1—M.D. Horizontal Mortising Machine, 1—M.D. Wood Turning Lathe, 1—M.D. Sand Preparing Machine, 1—M.D. Circular Moulding Machine, 1—M.D. Scraping Machine, 1—M.D. Dust Collecting Plant, 1—M.D. Motor Ventilating Plant, 1—M.D. Vacuum Cleaner, 1—Hand Power Horse-hair Carding Machine and 5—Sewing Machines (assorted).

Freight Car Shop and Wood Mill.—1—M.D. Horizontal Log Band Sawing Machine, 1—M.D. Band Sawing Machine, 3—M.D. Circular Sawing Manchines, 3—M.D. Planing Machines, 1—6-Spindle Boring Machine with Hollow Chisel Mortising attachment, 2—M.D. Tenoning Machines, 1—M.D. Vertical Hollow Chisel Mortising Machine, 1—M.D. Band Saw Sharpening Machine, 3—B.D. Cutter Grinding Mahines, 2—B.D. Saw Sharpening Machines, 2—B.D. Band Saw Repairing Machines, 1—M.D. Dust Collecting Plant and 1—M.D. Motor Ventilating Plant.



First Class Sleeping Car.

Truck, Wheel and Brake Shop.—2—B.D. Vertical Boring and Turning Mills, 2—M.D. Centre Grip Wheel Lathes, 2—B.D. Wheel Lathes, 1—M.D. Axle Lathe, 1—M.D. Hydraulic Wheel Press, 1.—M.D. Pneumatic Power Hammer, for Tyre Fastening, 5—B.D. Drilling Machines, 3—B.D. Lathes, 1—B.D. Break Lathe, 1—B.D. Punching and Shearing Machine, 1—B.D. Shaping Machine, 7—B.D. Screw Threading Machines, 1—M.D. Pipe Threading Machine, 10—Smith Fires, each with M.D. Fan, 1—Tyre Heating Furnace burning oil Fuel, with M.D. Fan and 2—Air Brake Triple Valve Testers.

General Stores.—M.D. Metal Sawing Machine.

Power House.—2—400 KW. Dynamos directly coupled to Vertical Compound Non-condensing Steam Engines, 2—250 KW. Motor Generators, 1—Set of Switch Boards, 1—Air Compressor, 1—Steam Fire-Service Pump, 3—Batteries of Babcock & Wilcox Water Tube Boilers, with Chain Grate Mechanical Stokers, Coal and Ash Conveyor, Fuel Economiser, Water Softening Plant & Co. Recorder Attachment and 3—Boiler Feed Steam Pumps.

Testing Laboratory.—1—Hydraulic Material Testing Machine for Tensile, Compression, Bending and Shearing Tests, 1—Hand Power Torsion Testing Machine, 1—Prinnel Ball Testing Machine, 1—B.D. Lubricating-Oil Testing Machine, 1—M.D. Cylinder-Oil Testing Machine, 1—B.D. File Testing Machine, 1—Combined Pressure Gauge and Vacuum Gauge Tester, 1—B.D. Lathe, 1—B.D. Milling Machine, 1—B.D. Hydraulic Power Pump and an equipment for Chemical Tests.

Fire Bridge Station.—Portable Fire Engine and 1—Hand Power Fire Pump.

NOTE.—M.D. denotes that the machine is driven by a Motor Independently.

B.D. denotes that the machine is driven by a Belt and grouped with other machines; all being driven by a common motor.

THE PEKING SYNDICATE.

The Board of the Syndicate gives the following information regarding questions in connexion with the Shansi oil concessions since the annual meeting:

Pursuant to the China (Amendment) Order in Council, 1913, which requires that companies incorporated in the United Kingdom, and carrying on business in China, shall be registered at the Consulate of the district in which their chief local office is situated, the Peking Syndicate has been registered at H. B. M's Consulate-General in Tientsin. Statements having appeared in the newspapers that foreign companies were being given, or, at least, were applying for, exclusive rights on the oil and other mineral deposits of the province of Shansi, the directors called the attention of the Foreign Office to the agreement between the Shansi Bureau of Trade and the Peking Syndicate, dated January 21, 1908, for the redemption of the Shansi concession, a clause of which stipulates in substance that no arrangement can be made in future with foreign capitalists for the financing of a mineral enterprise without the Peking Syndicate being approached in the first instance. The operations of reopening pit No. 4 have been proceeding satisfactorily. The output has now reached about 13,300 tons per fortnight; the output immediately preceding the inundation of water (September 1912) had been 13,367 tons per fortnight. A fall in sales is due partly to the necessity of readjusting the whole commercial department on new lines and partly to the abnormally warm weather experienced in the winter months. An agreement has been entered into for the transportation of coal by water from Taokou to Tientsin at a considerable reduction of the rates formerly charged. The briquette-making plant, after remaining idle during the winter months, has been started again.

A prospecting, or development, department has been formed for the purpose of extending the Syndicate's operations, investigating business propositions, and tendering for either mining or constructional engineering work of all kinds. An arrangement has already been made through this new department with the Tun Hsing Sino Foreign Coal Mining Company, Ltd., for boring at their mines at Mentakou, near Peking.

The £800,000 of the Chinese Imperial Government Honan Railway 5 per cent. gold loan of 1905 has been successfully offered for sale for the purpose of re-investing funds in Chinese Government Treasury Bonds at a higher rate of interest. Part of the company's participation in the Banque Industrielle de Chine has been realized at a substantial profit. The Syndicate has taken a participation of 10 per cent. in the company to be established for the construction and maintenance of tramways, electrical lighting, and waterworks in Peking, which have been entrusted to the Banque Industrielle de Chine. The Board's fixed policy is to work in close touch and harmony with the Chinese authorities.

UNITED STATES STEEL PRODUCTS CO.

The third (1914) edition of the General Catalogue of the United States Steel Products Co., is worthy of the Company responsible for its publication. From a typographical point of view alone it is noteworthy, as it is excellently printed in clear type and the illustrations are splendidly reproduced. There are in all 615 pages.

Some idea of the scope of the volume can be gained when it is mentioned that the index, which is printed in small type, occupies no less than 22 pages. Steel products of all kinds are described with tabulated information on every essential point, and illustrations are given to make the descriptions still plainer. It would be difficult to find any product of steel that is not described in this catalogue, but we learn that there are many special articles not enumerated, which are dealt with from time to time in separate pamphlets.

Although the cost of preparing this catalogue must have been enormous, we understand that those genuinely interested can obtain copies if they apply to the United States Steel Products Company, 24A. Kiangse Road, Shanghai.

THE TRANS-SIBERIAN RAILWAY SERVICES

GROWTH OF THE TRAFFIC

The rapid increase in the traffic over the Trans-Siberian system to the Far East is to be directly attributed to the improvement in the facilities offered, says a correspondent of *The Times*. At the present time it is possible for a passenger to leave London on a Sunday and arrive at Shanghai *via* the Russian railway system in 14 days, against 35 days when making the journey *via* Suez; and when the railway improvements, which have now been sanctioned by the Russian Government, are completed, the time of the journey to Peking will be reduced by two days, and the journey will then take 11 days only. This is being accomplished by the increased mileage of double tracks on the route, by the provision of new bridges, and other permanent-way work. It is estimated that the total cost of the double tracking of the 2,150 miles of the Trans-Siberian route will amount to about £13,000,000. The expenditure ought to be justified by the traffic; it cannot be too strongly emphasized that whereas Russian railway enterprise in Asia was formerly connected with plans for territorial expansion and offensive strategy both in the Middle and the Far East, it is now based upon ordinary commercial considerations of Imperial defence, and the peaceful development of these vast territories.

THROUGH BOOKINGS

It was the policy of arranging through bookings with the English railways which has stimulated the use of the route by the travelling public. The question of arranging tickets to the Far East was first discussed in 1905, but it was not until 1908 that a system was brought into operation under which passengers could take tickets and register luggage through to certain towns in the Far East, the principal places being Vladivostok, Nagasaki, Tsourouga, Shanghai, and Harbin. The Russo-Japanese War interrupted the extension of these facilities, but when the normal working of the railways was resumed, conferences between the administrations of railways and steamship lines concerned were again held, with the result that the State railways of Japan and Korea have been brought into the arrangement, and last year the Chinese railways (Peking and Mukden line) agreed to the issue of tickets and the registration of luggage to Peking and Tientsin.

Passengers from England can travel by various routes. To take only one example, they can begin their journey by using the excellent daily services to Moscow *via* Harwich and the Hook of Holland, leaving Liverpool-street at 8.30 p.m. on Sunday evening, and arriving in Shanghai *via* Siberia on the Saturday week, that is, 14 days. It may be pointed out that the distance from the Hook of Holland to Alexandrowo is the shortest from any Channel port. The journey through Russia and over the Trans-Siberian route can be made either in the Russian trains or by the services of the Sleeping Car Company. The Trans-Siberian trains of the Sleeping Car Company are composed of first and second class cars. The first-class compartments contain two sleeping berths, also table, chair, special reading lamp, and ample hook and rack accommodation for hand baggage. In the second-class cars of the Sleeping Car Company's trains there are a limited number of two-berth compartments, the remainder containing four berths each. There are no two-berth second-class compartments on the Russian State or Chinese Eastern Company's trains. The cars are supplied with electric light, and heated during the winter. The *personnel* of the trains generally speak four languages—Russian, German, English, and French. On the Chinese portion of the journey the attendants speak Chinese and Russian. The latest telegraphic news is posted in the restaurant car.

SIX THOUSAND MILES OF RAILWAY.

Until these services were instituted the Trans-Siberian route was but little known. It was in the year 1903 that the through traffic facilities were first provided. In conjunction with the Russian and Chinese Eastern Railways the Sleeping Car Company established a through train on the railway, which begins at Alexandrowo or at Wirballen, and thence over the broad-gauge railway of European Russia to Cheliabinsk, 2,311 versts from St. Petersburg. It is at this point that the two branch lines, one from St. Petersburg and one from Moscow, converge and connect with the Trans-Siberian Railway. From this station to Manchuria, a distance of 4,472 versts, the line runs right across Siberia through thousands of miles of forests and vast stretches of agricultural land, crossing several mountain ranges and important rivers to Manchuria. At Mandchuria, the first station in Manchuria, the Chinese Eastern Railway begins, and as this railway was built on the five-foot gauge, and is operated by the Russian Government, no change is necessary, after once starting on the Russian railways, until Vladivostok is reached, a distance of 1,604 versts. The distance traversed from St. Petersburg to Vladivostok is therefore 8,387 versts, or 5,560 miles. As Alexandrowo is 1,472 kilometres (915 miles) from Ostend, the total distance from Ostend to Vladivostok is 6,475 miles, or from London to Vladivostok 6,611 miles. By the route *via* St. Petersburg, Moscow, Samara, and Irkutsk it is 5,900 miles from St. Petersburg to Vladivostok, but by the northern route *via* Viatka the distance is reduced to the figure above mentioned. The last rail of this great enterprise was laid on November 3, 1901, but the line was not opened for permanent regular traffic until two years later.

NEW TRAINS AND FACILITIES

In addition to the through bookings *via* Siberia, a passenger can now take a round trip ticket from London to Shanghai by way of the Trans-Siberian Railways, and return from Shanghai to London available by any passenger steamer *via* the Suez Canal, the tickets being available for two years. This means that a passenger can now take a round trip ticket and register his luggage to Shanghai with no more trouble than he would have in booking and registering luggage to Amsterdam.

Further round-the-world facilities are under consideration, and it is expected that at the conference to be held in September next arrangements will be completed to enable a passenger to go out by the Canadian Pacific Railway, Cunard Steamship Line, or Hamburg-American Line services to the Pacific Coast, thence by steamer to Japan, and home *via* the Trans-Siberian Railways *via* Harbin, Mukden, Irkutsk, Moscow, or St. Petersburg; or the voyage may be taken in the reverse direction. To those whose leave is for a fixed period the saving of three weeks or more on the journey to and from home, is a great consideration; and in the course of a year or two it is most probable that the time taken *via* the Siberian Railways will be reduced. The growth of the traffic to the Far East since the Trans-Siberian through bookings were put into force has been remarkable, and the Russian State Railways have at the present time under consideration a question of new trains on the line between Wirballen-St. Petersburg, Alexandrowo-Moscow.

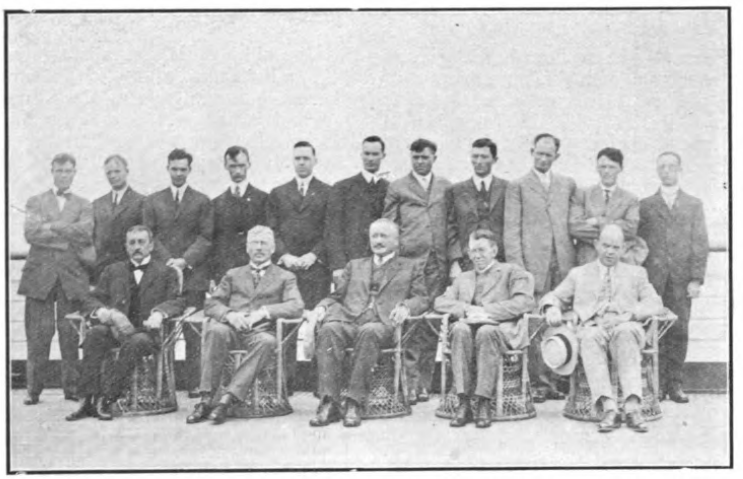
The administration of the Japanese State Railway and of the Manchurian Railways take a keen interest in the development of the traffic, and print the time-tables in English, and also publish guides in English.

A Board of Trade return states that the number of passengers, exclusive of season ticket holders, carried by British railways in 1913 amounted to 1,228,316,000, of whom 26,025,000 were first class, 12,088,000 second class, 933,498,000 third class, and 256,705,000 workmen. Their fares amounted to nearly £60,000,000. The total expenditure on railway working in 1913 was £78,803,000 and the total net income was £52,011,000.

The mileage of railways in Europe increased from 206,987 in 1910 to 212,651 in 1912, in America from 326,357 to 343,643, in Asia from 63,188 to 66,534, in Africa from 22,850 to 26,491, in Australasia from 19,229 to 21,678, and in the world from 638,611 to 670,997. Of the 212,651 miles in Europe at the end of 1912, 98,952 were privately owned, 321,406 out of the 343,643 in America, 22,694 out of the 66,534 in Asia, 10,656 out of the 26,491 in Africa, 2708 out of the 21,678 in Australasia, and 456,416 out of the 670,997 in the world.

Gatun Dam, enhanced that which he had gained during his ten years' experience of flood prevention on the Mississippi and Ohio. Mr. Arthur P. Davis, Chief Engineer of the U. S. Reclamation Service, has naturally special qualifications for the work that had to be done, while Professor D. W. Meade of the Wisconsin University is one of the most eminent consulting hydraulic engineers in America. That three such men, with Mr. Jameson as General Adviser, were to undertake the final investigations formed a guarantee that they would be carried out most scientifically and thoroughly. The Board brought with them a staff of specially selected American surveyors.

Before the departure of the party from America Mr. Jameson was able to submit the results of two additional years of instrumental surveys in the flood region by the Kiangsu survey students. It may be mentioned that subsequent investigation have shown that the levels and data collected during this period were accurate. These maps and plans, which were placed at the disposal of the Board, proved of the greatest assistance, and the excellent work, performed reflected the greatest credit upon Mr. Chang Chien, who for ten years had taken great interest in flood prevention and who was responsible for the education and appointment of the Kiangsu students who have made these surveys. The Board of engineers arrived in Shanghai on June 28 and lost no time in beginning their investigations. Two parties were formed. The first party proceeded along the Grand Canal from the Yangtsze to Tsing Kiang-pu. The other started at Haichow and checked back to Tsing Kiang-pu. One man was detached to check the levels down the Hwai River and across the Hungtze Lake.



American National Red Cross Conservancy Engineers to China. Front row, left to right:—Mr. C. D. Jameson, General Adviser; Mr. A. P. Davis, Colonel Sibert, Professor Meade; Mr. Cornish, Principal Assistant.

An investigation was made of all the water courses along the Railway from Pukow to the Grand Canal down the Hwai River to Tsing Kiang-pu and then down the Grand Canal to the Yangtsze. As a result of the investigation made it is probable that better results can be attained than Mr. Jameson indicated in his original report. There are no insurmountable difficulties in carrying out the work. It will not be a philanthropic one pure and simple, but will more than pay for itself as a business proposition.

The Board returned to Shanghai on August 24. The whole party left two days later for Hankow. Then they were to visit Kaifengfu, and make an examination of the Yellow River, as the condition of that river is rather an important factor. The party then goes to Peking, and will return to Shanghai to catch a steamer on September 19 for America. The Report of the Commission will probably be submitted to the Red Cross in October.

FAR EASTERN RAILWAYS

CHINA

Kirin-Changchun Railway.—It has been decided to build a repairing shop at Changchun for the repair of rolling stock.

Nanchang-Kiukiang Railway.—A Japanese paper reports that on June 30 an agreement was concluded between the East Asia Development Co. and the Chinese company which has been building the Nanchang-Kiukiang railway, since 1906, for a loan of Y2,000,000. The line has been constructed between Kiukiang and Tehanhsien, a distance of about 35 miles, and it is hoped that the Y2,000,000 will be sufficient to build the remaining fifty miles. The interest on the loan is said to be 6½ per cent., and the principal is redeemable in twenty years.

Lanchowfu to Kuldja.—A Peking report states that a preliminary contract has been signed by the Chiaotungpu and a Belgian syndicate to construct a line from Lanchowfu to Kuldja. It will be 1,850 miles long and will cost £12,000,000. The construction loan will be secured upon the line itself and mining concessions in Kansu and Sinkiang.

American Railway Material.—Consul-General F. D. Cheshire, stationed at Canton, reports that the following purchases of railway material have been made from American manufacturers, values being in United States currency.

Canton-Kowloon Railway, locomotive electric headlights and car couplers, $3,000; Canton-Hankow Railway, 5 locomotives of consolidated type, $100,000: 60 covered freight cars, $100,000; 40 open freight cars, $50,000; 60,000 American redwood sleepers and large quantity of bridge and crossties, $60,000; locomotive turntables, and steel bridges, $26,000.

In addition sundry articles of American manufacture, such as electrical lamps, fans, railway, supplies, lubricating oils, etc., have been purchased in greater quantities, during the past year than ever before.

Shanghai-Nanking Railway.—The following figures of traffic returns (approximately) for the week ended July 25, are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	40,321	13,903	54,224
1913....	41,066	8,494	49,560
Increase.	—	5,409	4,664
Decrease	745	—	—

For four weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	149,374	44,728	194,102
1913....	168,920	39,272	208,192
Increase.	—	5,456	—
Decrease	19,546	—	14,090

Week ended August 1.

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	39,587	13,746	53,333
1913....	28,087	5,014	33,101
Increase.	11,500	8,732	20,232
Decrease	—	—	—

For five weeks.

Year.	Passengers.	Goods & Sundries.	Total.
	$	$	$
1914	188,961	58,474	247,435
1913	197,007	44,286	241,293
Increase.	—	14,188	6,142
Decrease	8,046	—	—

Week ended August 8.

Year.	Passengers.	Goods & Sundries	Total for the week.
	$	$	$
1914	43,608	11,722	55,330
1913	28,884	5,598	20,480
Increase.	19,724	6,124	26,848
Decrease	—	—	—

For six weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	232,569	70,196	302,765
1913....	220,891	49,884	270,776
Increase.	11,678	20,312	31,990
Decrease	—	—	—

Week ended August 15.

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	47,518	10,614	58,132
1913....	22,124	4,819	26,961
Increase.	25.394	5,795	31,171
Decrease	—	—	—

For seven weeks.

Year.	Passengers.	Goods & Sundries	Total for the week.
	$	$	$
1914....	280,087	81,810	360,897
1913....	243,633	54,703	297,736
Increase.	37,054	26,107	63,161
Decrease	—	—	—

Week ended August 22.

Year.	Passengers.	Goods & Sundries	Total for the week
	$	$	$
1914....	46,930	10,360	57,290
1913....	*24,762	*4,642	*29,404
Increase.	22,168	5,718	27,886
Decrease	—	—	—

For eight weeks.

Year.	Passengers.	Goods & Sundries.	Total.
	$	$	$
1914....	327,017	91,170	418,187
1913....	267,795	59,345	327,140
Increase	59,222	31,825	91,047
Decrease	—	—	—

*No traffic beyond Tanyang in 1913.

MALAYA

Singapore to Bangkok.—Says the *Malay Mail*:—The date on which it will be possible to go by rail from Singapore to Bangkok has been for long, and is likely to remain for some time yet, a fruitful source of speculation. Necessarily it can be little more.

We are gradually, however, approaching a point at which a date can be fixed with something very near certainty. From all the indications it would appear that, so far as the southern part of the Peninsula is concerned the western line will be the first to be pushed through to Siam, and a step in this direction was made when on July 4 the last spike was driven on the line linking up Bukit Mertajam and Alor Star. This, of course, does not mean that the line is by any means open to traffic. It is hoped, however, on the first of October to commence traffic up to Pinang Tungal (Muda River) on the boundary between Province Wellesley and Kedah. After that sections will be opened up as they are finished off, until ultimately the whole of the line up to Alor Star is in use, this being most probably accomplished at the end of 1915 or early in 1916.

The length of line from Bukit Mertajam to Alor Star is 56 miles, and it is proposed to link up from Alor Star to the Perlis-Siamese boundary, to meet a line to be built from Ootapao, the nearest point on the completed portions of the Siamese system, which forms, roughly, a triangle between Trang, Tung Sawng and Singgora. The survey is now being made from Alor Star to the Perlis-Siamese boundary, the portion of the line which will be built by the F. M. S., while the Siamese authorities are doing similar work on the other side of the boundary, the intention being, apparently, to push on this connecting link as soon as possible. It is anticipated that through traffic will be established between Alor Star and Ootapao during 1917, probably towards the end of that year.

The length of the proposed new line between Alor Star and the Siamese boundary is from 40 to 45 miles. The country between Alor Star and Aro is similar to that around Alor Star, consisting mostly of padi fields. From Aro to the boundary it consists of *kebuns* and padi fields, so that the whole of the projected new line is through comparatively easy country. It will cross the boundary at Padang Besar. Between Aro and the boundary the line will run through some particularly beautiful country, consisting of limestone hills like those at Batu Caves. In this district also are the phosphate mines, an industry that will doubtless be considerably helped by the coming of the railway.

To the East, about ten miles from Aro, is Bukit Arang, where the Perlis Government intends to bore for oil, work for which it is now calling for tenders.

The date at which through connection between Bangkok and Singapore is secured will, of course, depend entirely upon the speed with which the Siamese authorities push on their work of filling up the gaps in their main line between Bangkok and Tung Sawng. As to how this work is progressing very little is known in the F. M. S., but an authoritative opinion expressed to us the other day was to the effect that progress was steady, and that the through route might be open some time in 1918.

As to the intentions of the F. M. S. Government with regard to the eastern line at present open for traffic up to Kuala Tembeling, and under construction up to somewhere in the neighbourhood of Kuala Lipis, no information is available officially, but unofficial news would seem to indicate that the work is being pushed forward.

TRAMWAYS

Shanghai Tramways.—The following is the traffic return of the Shanghai Tramways (Foreign Settlement) for the month of July, 1914, and for seven months ended July 31, 1914, with figures for the corresponding periods last year:—

	July, 1914.	July, 1913.
	$	$
Gross receipts	113,758.87	111,342.15
Loss by currency depreciation	27,998.41	24,666.24
Effective receipts	85,760.46	86,675.91
Percentage of loss by currency depreciation	26.25	23.24
Car miles run	313,684	262,808
Passengers carried	5,058,861	4,552,571

	seven months ended July 31, 1914.	seven months ended July 31, 1913.
	$	$
Gross receipts	750,001.81	651,139.76
Loss by currency depreciation	175,279.96	141,048.89
Effective receipts	574,721.85	510,090.87
Percentage of loss by currency depreciation	24.76	22.04
Car miles run	1,915,801	1,619,119
Passengers carried	31,482,225	25,897,237

Week ended July 29.

	1914.	1913.
	$	$
Gross receipts	24,692.79	31,162.71
Loss by currency depreciation	6,046.28	6,975.65
Effective receipts	18,646.51	24,187.06
Percentage of loss by currency depreciation	26.21	23.29
Car miles run	70,670	63,810
Passengers carried.	1,103,838	1,248,331

Week ended August 5.

	1914.	1913.
	$	$
Gross receipts	24,332.22	26,125.90
Loss by currency depreciation.	6,029.43	5,917.75
Effective receipts	18,302.79	20,208.15
Percentag of loss by currency depreciation	26.34	23.66
Passengers carried.	1,082,823	1,062,236
Car miles run	69.331	59,885

Week ended August 12.

	1914.	1913.
	$	$
Gross receipts	26,040.24	24,352.42
Loss by currency depreciation	6,396.67	5,582.17
Effective receipts	19,643.57	18,790 25
Percentage of loss by currency depreciation	26.10	23.96
Passengers carried.	1,163,749	985,504
Car miles run	71,076	59,200

Week ended August 19.

	1914.	1913.
	$	$
Gross receipts	26,664.22	24,176.64
Loss by currency depreciation.	6,546.28	5,515.98
Effective Receipts	20,118.34	18,660.66
Percentage of loss by currency depreciation	26.10	23.93
Passengers carried	1,155,293	984,227
Car miles run	74,475	59,354

Week ended August 26.

	1914.	1913.
	$	$
Gross receipts	25,609.10	23,379.63
Loss by currency depreciation	6,346.82	5,425.29
Effective receipts	19,262.28	17,954.43
Percentage of loss by currency depreciation	26.38	24.39
Passengers carried	1,151.200	963,978
Car miles run	70,349	59,321

MINING

Kailan Mining Administration. — The total output of the Administration's mines for the week ended July 18, amounted to 57,128.84 tons and the Sales during the same period to 36,948.32 tons.

Week ended July 25, output 58,641.86 tons, sales 57,603.33 tons.

Week ended August, 1, output 56,368.96 tons, sales 29,777.79 tons.

Week ended August 8, output 54,292.42 tons, sales 46,269,19 tons.

Week ended August 15, output 45,758.71 tons, sales 55,163.10 tons.

HARBORS, ETC.

The Whangpoo Conservancy.—The dredging away of Pootung Point in the Whangpoo River has been begun. It is at present being carried out by contract, but the contract expires shortly and the work will later be carried out by the Conservancy's own plant.

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DR. ADAMS AND RAILWAY ACCOUNTS

The departure of Dr. Henry C. Adams from Peking for America on September 12 brought to a close the first stage of one of the most important essays at reform in China's railway management that has so far been made. Dr. Adams came to China about a year ago at the special instance of the Ministry of Communications to assist a Commission in the unification of China's railway accounts and statistics; and for this work Dr. Adams was granted a year's leave by the Interstate Commerce Commission, of which he is a distinguished member. We have made frequent reference to the progress of the Commission's work, but so far have published no comments by Dr. Adams, an omission which we are now able to repair by recording the gist of a conversation held with him prior to his departure.

Dr. Adams came to China apprehensive of the growth of considerable difficulties as his work proceeded. The conditions surrounding the creation of what railway system existed in China were, on the surface, extraordinarily complicated by international rivalry and jealousy; and the cosmopolitan nature of the financing and the accounting postulated obstruction from the outset. But to Dr. Adams' great surprise these difficulties quickly proved themselves to be more imaginative than real. A conference between the accountants of the various railways and the Chinese constituting the specially created Unification of Accounts Commission established a harmony that developed as time went on, and proved the existence on the part of the foreign accountants of a genuine desire to have a set of accounting forms created whereby there could be general uniformity in the railway accounting and statistic service of the country. Of this Dr. Adams spoke with considerable pleasure, attributing whatever success had been obtained to the co-operation of the various foreign accountants.

"The first work undertaken by the Commission, was," said Dr. Adams, "the arrangement of rules and regulations for the control of construction accounting. That is, the engineer's classification of capital expenditures. Those rules have been promulgated and are now in force; and so far as formulated accounting is concerned the Chinese accounts are in better shape in this direction than in any other part of the world.

"The operating accounts were next considered, and just as explicit and detailed rules were devised for auditing the operating revenues as for the construction accounts. All expenses are properly classified, and on every road in the Government's control items of expense will be recorded under the same heads. In fact the headings of the construction and operating accounts are the same—a feature not in existence in any other country. It will give a test which no other country is getting—a test of operation easily applied. These accounts will show the percentage of maintenance cost on capital cost; each year can be found out the percentage of maintenance charges to the original cost, and that analysed by eighteen or twenty sub-heads. These figures cannot be got right off the accounts in use in any other country.

"A third set of accounts will show the true surplus for the year and for each individual road since its beginning. It will supply the figures used in budgets, and thus give what has not been obtainable before—the actual profit, if any. Each year will stand by itself. The income account is, for China, a most important thing; it gives the operation expenses and the amounts due, for instance, with regard to bonds for each year; and a special account is provided to pay off old debts. These accounts provide the control, and with their aid auditors can go to any road and find out what is being done, and what is being made, for the foreign bond-holder as well as for the Chinese. My hope is that this will not create a controversy; the foreign bondholder should regard it as being as important to him as to the Government."

Dr. Adams leaves the country hoping that the result of the labors of the Commission with which he was so happily connected will be thoroughly enforced. He points out that China occupies a unique position. As she is, at the beginning of her railroad activity she has secured in one year what it took twenty years in

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other countries to work out. She has, further, had the advantage of their experience and now possesses more advanced accounting forms than they possess. This in itself should be an incentive to the Government to introduce and enforce the use of all the forms framed by the Commission. China has, in the past, employed a multitude of Commissions and has pigeon holed their reports. This Commission has done something tangible and practicable, and it will be extremely regrettable, and criminal short-sightedness, if the Government fails to utilise what it has now secured.

RIVER CONSERVATION

The departure of the engineering party headed by Colonel Sibert for America signalises progress in the work which the Red Cross Society of America is endeavoring to do for China. The party was despatched by the Society to make a report upon the feasibility of flood prevention in the Hwai River region, and after careful examination Colonel Sibert will be able to make a favorable report. Although Colonel Sibert while in Peking had several interviews with the Minister of Commerce, Industry, and Agriculture, and also had audience of President Yuan Shih-kai, he made no formal report to the Chinese with regard to his observations in the famine area. No report will be made, in fact, until the one is complete for the Red Cross Society; but we have reason to believe that Colonel Sibert will recommend proceeding with the work. Then will come the question of finances. It will be remembered that a loan of $50,000,000 (United States Currency) was talked of for this purpose, but the European conflict, with its wrecking of markets, is likely seriously to affect the chances of raising such a charity loan as that which will be required for Hwai River conservation work.

It is certain, in fact, that the development of the scheme will now be materially delayed, but the delay might well be advantageously availed of by China to make investigations which will be of great assistance to the engineers whenever the time arrives for the employment of human energies to overcome the whims of nature which now contribute to such periodical loss. China may, and should, begin at once to obtain data about her rivers. She should have done so long ago, but she has failed in that respect. Now that America has come forward with the explicit intention of assisting in harnessing one of her most erratic streams it is incumbent upon the Chinese to render as much aid as possible. The erection of gauges for the measurement of the rise and fall of river waters, and the registration of rainfall, are two of the simplest and yet most important steps that can be taken. China has signally failed in the collection of data illustrative of the character of her rivers and her rainfall. Missionaries have in some cases regularly recorded the rainfall, but something systematic and general is required. The Missionaries will be only too glad to render further aid to the Government in this direction; a fact which might easily be tested by an offer to supply various missionary stations with rain gauges. In localities where there are no mission stations Chinese in the Telegraph service might have the duty imposed upon them of keeping regular readings, and telegraphing them to some central recording station; and where there are no telegraph stations other officials might easily be selected for the work. A thorough record of the rainfall in given areas will be of the utmost value to any engineers engaged upon conservancy work, and if that is supplemented by accurate records of the heights of water at different places at different periods in given rivers the engineers will have information of tremendous assistance to them. The sooner the Government can appreciate this the better it will be. Nothing can be accomplished without painstaking preparation, but results will come quicker if steps are taken early.

CHINA'S RAILWAYS AND THE WAR

When it first became clear that all the Great Powers of Europe and Japan were involved in the War much pessimism was felt in some quarters in regard to the prospects of railways in China. Great emphasis was laid upon the fact that almost without exception China's railways had been built, or were to be built, with money obtained from abroad. In view of the fact that, whatever the outcome of the War, the victors would suffer economically almost as much as the vanquished, it was pointed out that the money for railway development in China would not be forthcoming, at all events for a very long time.

There is, of course, considerable truth in these contentions, but we do not believe that the situation is quite so dark as it has been represented to be. The money for the construction of the Hukuang lines, or, to be more accurate, the amount that was deemed originally to be sufficient for their completion, has been paid up and is held in the Banks concerned at the disposal of the Government of China. As far as this system is concerned, therefore, there is no reason why the work of construction should not proceed irrespective of the happenings in Europe and in Shantung. This applies also to the completion of the Shanghai-Ningpo line for which ample funds are available. It is true that the agreements for the construction of new lines obtained by the Belgians, British, French, Germans and Japanese will necessarily be held up for some time, but there are other sources from which money can be obtained. The opportunity is open to America to assist China in improving her communications and there is no apparent reason why it should not be taken. In spite of the attitude taken up by the Wilson Administration in regard to the Sextuple Consortium, which led to the withdrawal of the American Group just as the success of the long and tedious negotiations was assured, we believe that any legitimate American enterprise in China would now receive the protection, if not the support, of the State Department. If that be so there is at least a possibility that the American financiers who understand the importance of extending American influence in this part of the world will be prepared to step into the financial breach.

Apart altogether from extraneous aid, China can do something with her own resources. The internal loan now being floated is being taken up with more readiness than was expected. It is true that a feeling of uneasiness still prevails among a considerable portion of the population, and that this is not conducive to the exhibition of implicit confidence such as is shown by investors in other countries. But the hopelessness of success attending any rising against the existing Government should be apparent. The great bulk of the people are desirous of peace. Especially is this true of the merchant class, who have nothing to gain and much to lose by a recrudescence of rebel activity. In such circumstances the uneasiness that exists should disappear, and it would cease the sooner if the moneyed classes recognised that financial support to the Government at this juncture would indicate to the rebel elements that the assistance without which their efforts would be useless would be given, not to them, but to those whom they wished to overthrow and supplant. The natural timidity of the Chinese might prevent for a while any considerable accretion of funds to the Government from domestic loans, but as the sense of security grows such a desirable outlet for money which is not now earning interest is sure to be utilized. Chinese Government loans for railway construction should in particular, appeal to the Chinese investor. He has the object lessons of the Railways of North China and the Peking-Hankow Railway to inspire him. Those lines do considerably more than meet their interest charges and there are others which are rapidly nearing the same satisfactory situation. If the Chinese will only show confidence in themselves and their country, there is no reason why railway construction should not proceed in spite of the stupendous struggle that is bathing Europe in blood.

THE CHOSEN RAILWAY

Owing to the irregularity of the express service on the Trans-Siberian route, caused by the present situation in Europe, the Chosen-Manchuria express between Fusan and Changchun, which has hitherto been operated three times a week, will be run once a week for the time being.

PANAMA-PACIFIC INTERNATIONAL EXPOSITION

BREAKING GROUND FOR THE CHINESE VILLAGE PAGODA AND TEA GARDEN

China, the newest republic, gave the citizens of the oldest republic an example in ground breaking exercises on "The Zone" of the Panama-Pacific International Exposition on July 17. It was the prettiest ceremony that has marked the pre-exposition period and several thousand persons gathered around the ropedin area to see the mingling of old and new world customs.

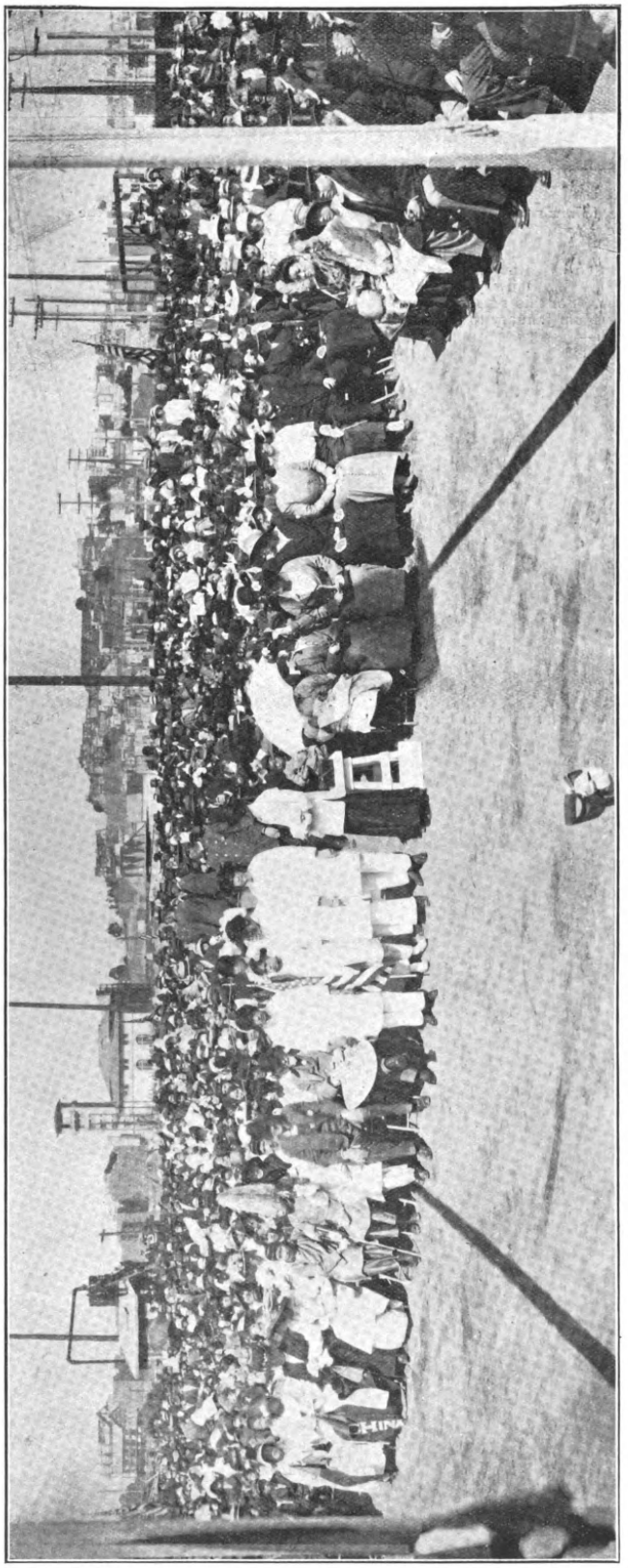
The day marked the formal beginning of the Chinese Village Pagoda and Tea Garden, which is to have an attractive corner on the 65 acres given over to concessions. The program at the site was preceded by a parade of several hundred in gaily decorated automobiles through the business streets of San Francisco.

Consul General S. C. Shu, of China, was one of the speakers. Representatives of the governor of California, the mayor of San Francisco and of the Exposition made short addresses. R. T. Park, managing editor of the *Chinese World*, was master of ceremonies.

Chinese girls in native costume sang "I Love You California" and "America," and two young women, Misses Mary Wong and Mary Wing, raised the flags over the site. After ground had been broken with a silver spade the Chinese girls and others sprinkled pop corn over the ground to bring good luck.

The Chinese Village Pagoda and Tea Garden promises to be one of the most beautiful structures on the grounds and will cost G. $48,000 without the furnishings, which are to represent an outlay of G.$200,000.

In the accompanying photograph of the crowd taken from the speakers' stand a few of the Exposition attractions are shown in course of construction.



Breaking ground for the Chinese Village Pagoda and Tea Garden at the Panama-Pacific International Exposition.

CANTON-HANKOW RAILWAY

It is reported that arrangements have been made whereby funds for the construction work of the Canton-Hankow Railway have become available. Some little difficulty was experienced as the proceeds of the loan were under the control of the original Quadruple Group and it was necessary to obtain saction for the use of the funds from each individual member of the Group. Now that this has been obtained the work will progress as rapidly as possible under the direction of Dr. Jeme Tien-yu.

SALT INDUSTRIAL BANK

The advisability of establishing a salt industrial bank has been suggested by Mr. Chang Chen-fang, Financial Adviser to the President. It is claimed that the establishment of such a bank would lead to the more speedy collection of the salt revenue, besides assisting the salt industry in various ways.

Lieut.-General Baron Satoru Nakamura has been appointed Governor-General of Kwantung in succession to Baron Yasumasa Fukushima, who was promoted to the rank of full General and placed on the reserve list at the same time.

CHINESE GOVERNMENT RAILWAYS

PEKING-MUKDEN LINE

The following is the report of the Peking-Mukden Railway for the Half-Year from 1st January to 30th June 1913:—

The National Assembly having fixed the 30th June as the date on which the fiscal year of the Chinese Government will be closed in future, the accounts of this Railway have been made up to that date to comply with the order. For this reason the present report only deals with six months working from January to June and the results are compared in the following table:—

	Half year ending 30th June		
	1911	1912	1913
Earnings...	5,330,328.46	6,105,993.00	7,820,588.32
Working Expenses	1,846,830.41	1,983,641.02	2,088,434.35
Balance after paying Working Expenses	3,483,492.05	4,122,352.94	5,741,153.97
Ratio of Working Expenses to Earnings	35%	32%	27%

MILEAGE.—The mileage open to traffic is 605.76 miles.

LOANS.—The next repayment of the Imperial Chinese Railways 5% Gold Loan of 1899 falls due on 1st August, 1914.

The service of the Gold Loan of the South Manchurian Railway has also been duly met.

EXCHANGE.—The monthly remittances to London in settlement of Loan service were made at the average rate of 2/10⅛ per Tientsin Tael.

LU TSOI-CHEE
Managing Director.
CHU KIN-HOW
Associate Director.

STATEMENT OF ACCOUNTS

CAPITAL AUTHORISED AND CREATED

Details	Capital Authorised			Capital Created			Balance		
	Stock and Shares	Loans	Total	Stock and Shares	Loans	Total	Stock and Shares	Loans	Total
	$	$	$	$	$	$	$	$	$
Chinese Government and Chinese Shareholders	21,994,428.57	—	21,994,428.57	21,994,428.57	—	21,994,428.57			
Under Loan Agreement 1899 £2,300,000 ...	—	27,600,000.00	27,600,000.00	—	27,600,000.00	27,600,000.00			
Under Japanese Loan Agreements, South Manchuria Rly. Loan, 1909, Gold Yen 320,000...	—	377,142.86	377,142.86	—	377,142.86	377,142.86			
$	21,994,428.57	27,977,142.86	49,971,571.43	21,994,428.57	27,977,142.86	49,971,571.43			

STOCK AND SHARE CAPITAL CREATED SHOWING PROPORTION ISSUED.

	Amount Created	Amount Issued	Amount Unissued
	$	$	$
Chinese Government and Chinese Shareholders	21,994,428.57	21,994,428.57	—
	$ 21,994,428.57	21,994,428.57	—

CAPITAL RAISED BY DEBENTURE STOCK

	$
CHINESE GOVERNMENT PEKING-MUKDEN 5% RAILWAY LOAN FORMERLY CALLED IMPERIAL CHINESE 5% RAILWAY LOAN, 1899 (original amount of Loan £2,300,000).	
Existing at 31st December, 1912...	£ 1,840.000 — 22,080,000
Existing at 30th June, 1913	£ 1,840.000 — 22,080,000
Of which there was invested in the Hongkong & Shanghai Bank, London, at 31st December, 1912	£44,995.15.5 — 539,949.28
Withdrawals	£44,995.15.5 — 539,949.28
Leaving invested in the Hongkong & Shanghai Bank, London, at 30th June 1913	— —
SOUTH MANCHURIA RAILWAY LOAN, 1909 (original amount of Loan G. Yen 320,000.00).	
Existing at 30th June 1913... G. Yen 257,777.81	

RECEIPTS AND EXPENDITURE ON CAPITAL ACCOUNT

To EXPENDITURE	Total to 31st Dec. 1912	Amount expended in Half Year to 30th June 1913	Total to 30th June 1913
	$	$	$
Lines open for Traffic	49,035,095.65	—	49,035,095.65
Steamer...	330,475.78	—	330,475.78
	$ 49,971,571.43	—	49,971,571.43
Balance...			Nil
			$ 49,971,571.43

By RECEIPTS	Total to 31st Dec. 1912	During Half Year June 30th 1913	Total to 30th June 1913
	$	$	$
Shares	21,994,428.57	—	21,994,428.57
Deberture Stock	27,600,000.00	—	27,600,000.00
South Manchuria Rly. Loan	377,142.86	—	377,142.86
			$ 49,971,571.43

DETAILS OF EXPENDITURE ON CAPITAL ACCOUNT.

Nil

EXPENDITURE ON CAPITAL WORKS PAID FOR FROM REVENUE

Betterments		
Rolling Stock	234,278.46	
Tongshan Works	16,086.18	
Additions to Stations	19,235.54	
Staff Quarters	12,456.59	
Carriage and Locomotive Sheds	32,440.90	
Other Buildings	9,303.82	
Standard Oil Siding	19,253.62	
Other Sidings	18,238.50	
Doubling track from Huang-ku-tun to Mukden Station S. M. R.	41,532.49	
Miscellaneous	3,219.45	
Expended during Current Half Year		406,045.55
Expended in Previous Years		9,358,544.55
		$ 9,764,590.10

REVENUE ACCOUNT

Dr.			*Cr.*		
To Maintenance of Way, Works and Stations as per Abstract A	534,004.85		By Earnings		
„ Locomotive, Carriage and Wagon Expenses as per Abstract B.	993,837.48		Passengers	3,058,717.39	
„ Traffic Expenses as per Abstract D.	274,784.84		Goods	4,359,497.74	
„ General Charges „ „ E.	285,807.18		Miscellaneous Receipts	250,284.84	
	2,088,434.35		Chinese Government Traffic	152,088.35	
„ Balance carried to Net Revenue Account	5,741,153.97				
	7,829,588.32			$ 7,829,588.32	

NET REVENUE ACCOUNT

Dr.		*Cr.*	
To Debenture Loan, Interest	456,760.76	By Balance forward from last year	6,111,646.42
Chinese Shares, Interest	13,457.15	„ Balance transferred from Revenue Account	5,741,153.97
„ S.M.R. Loan, part capital repaid	9,428,57		
„ „ „ „ Interest	7,071,41		
„ Paid to Chinese Government	4,497,552.73		
„ Shipping Department	9,600.70		
„ Tongshan College, Upkeep	37,800.00		
„ Bonus to Employees	197,474.04		
„ Betterments, being amount taken from Revenue for Capital Works	406,045.55		
„ Balance	6,217,609.48		
	$ 11,852,800.39		$ 11,852,800.39

GENERAL BALANCE SHEET

Dr.			*Cr.*		
Capital Account, Balance	Nil		Hongkong and Shanghai Bank, London Indemnity Funds	£20,000	240,000.00
Salaries and Wages due	236,137.17		Revenue Funds, on Deposit Rect	35,000	
Sundry Creditors	141,865.53		Revenue Funds, on Current Account "A"	31,451.15.9	797,421.44
B. R. A. Balance taken over	3,293,107.44		To meet repayment of Loan Capital		515,191.94
Net Revenue A/c. Balance at Credit	6,217,609.48		Cash with foreign Banks in China		
			On Deposit Receipt	$1,495,714.29	
			On Current Account	757,975.88	2,253,690.17
			Cash on hand in Head Office		197,071.54
			Stores		3,028,156.58
			Investments		1,199,289.09
			Traffic Accounts due to the Railway		640,266.76
			Other Accounts due to the Railway		906,082.49
			Accounts due by other Railways		61,549.61
	$ 9,888,719.62				$ 9,888,719.62

WM. HENDERSON, C.A.,
Chief Accountant.

ABSTRACTS.

A. Maintenance of Way, Works and Stations.

Half Year ending 30th June, 1912			Half Year ending 30th June, 1913	
80,862.30		Salaries, Office Expenses and General Superintendence		86,859.42
		MAINTENANCE AND RENEWAL OF PERMANENT WAY:—		
159,257.36		Wages	170,190.43	
178,303.48	337,560.84	Materials	200,680.95	370,871.38
		REPAIRS OF BRIDGES.		
9,081.63		Wages	4,358.16	
15,067.87	24,149.50	Materials	12,627.32	16,958.48
	53,758.24	REPAIRS OF STATIONS AND BUILDINGS.		59,288.57
$	496,330.88		$	534,004.85

B. and C. Locomotive Power and Rolling Stock Repairs.

Half Year ending 30th June 1912.			Half Year ending 30th June 1913.	
78,120.70		Salaries, Office Expenses and General Superintendence		87,599.51
		RUNNING EXPENSES		
81,380,15		Wages connected with working Locomotive Engines	86,520.98	
236,092.91		Coal	292,330.90	
23,890.92		Water	29,876.48	
40,571.66	381,935.64	Oil Tallow and other Stores	44,329.07	453,057.43
		MAINTENANCE AND RENEWAL OF LOCOMOTIVES AND MACHINERY:—		
163,380.57		Wages	158,375.53	
63,573.67	226,954.24	Materials	84,409.07	242,784.60
		REPAIRS AND RENEWALS OF CARS:—		
		Coaching Vehicles:		
37,409.41		Wages	42,487.21	
23,193.39	60,602.80	Materials	50,881.52	93,368.73
		Goods Vehicles:		
36,086.79		Wages	36,290.15	
55,657.43	91,744.22	Materials	48,176.53	84,466.68
	21,586.17	Cleaning Carriages and Oiling		26,364.37
	860,943.77			987,641.32
	6,810.49	Steam Ferry at Newchwang		6,196.16
	$ 867,754.26			$ 993,837.48

D. Traffic Expenses.

Half Year ending 30th June, 1912			Half Year ending 30th June, 1913	
$	$		$	$
45,459.42		General Superintendence	51,615.84	
129,312.21		Wages of Station Staff	141,485.46	
37,005.06		Wages of Train Staff	39,052.50	
36,571.37		Lighting and Small Stores	38,242.44	
Nil		Wagon Covers, Ropes, etc.	43.17	
3,947.20		Station Fittings and Furniture	4,345.43	
	252,295.26			274,784.84

E. General Charges.

Half Year ending 30th June, 1912			Half Year ending 30th June, 1913	
$	$		$	$
132,737.77		General Superintendence	130,240.19	
37,346.25		Accountant's Department	39,683.07	
35,713.58		Stores Department	36,071.63	
19,464.48		Medical Department	24,497.54	
3,958.03		Rents of Buildings and Lands	2,620.15	
47,615.22		Police	50,251.75	
75,191.12		Telegraph Department	83,854.22	
32,332.63		Stationery and Printing	41,983.61	
2,283.76		Compensation	1,506.20	
26,693.13		Sundries	25,851.36	
413,335.97		Interest, &e.	437,459.72	
Cr. 46,075.35			Cr.151,652.54	
$	367,260.62		$	285,807.18

EARNINGS.

Half Year ending 30th June, 1912			Half Year ending 30th June, 1913	
$	$		$	$
2,683,778.52		Passengers	3,058,717.39	
3,166,288.06		Goods	4,359,497.74	
58,153.63		Military Traffic	—	
105,220.53		Miscellaneous Receipts	259,284.84	
92,553.22		Chinese Government Traffic	152,088.35	
	6,105,993.96			7,829,588.32

REPORT ON PERMANENT WAY DEPARTMENT

Miles of Main Line Track ... ... 605.760 miles.
Miles of Sidings, permanent 157.533
temporary ... ... 6.492 Total 164.025 ,,

Increase of Main Line ... ... nil.

Increase of Sidings, permanent 6.871
Decrease of Sidings, temporary ... ... 1.820 Net increase 5.051 ,,
New sleepers put in for maintenance.

(a) 8' Sleepers ... ... 129,173.
(b) Crossing sleepers ... ... 900.

Rails changed.

7 Old section 60 lbs. broken or defective.
8 New section 60 lbs. " " "
1 85 lbs. " " "
1 Japanese 60 lbs. " " "

1513 ft. Old section 60 lbs. track replaced by new section 60 lbs.
Fangs of ballast used for maintenance ... ... 7,133.
Fangs of ballast used for new work ... ... 2,704.
Floor ties renewed ... ... 211.

Probable renewals for next year

(a) 8 ft. sleepers ... ... 250,000.
(b) Crossing timbers 1,975,
(c) Floor ties... ... ... 7,200.

New bridges Completed.

Bridge No. 52, 23 spans of 30 ft., timber piles and concrete piers, girders of old 52 bridge used again.
Fangs of rubble used for protective work ... ... 4,266.
Probable extra bridge work, etc., necessary to cope with floods:—
Re-forming and pitching bank between Yang-tsun and Chang-chuang.
Sui-chung-hsien, Extension of No. 188 bridge.
Strengthening Liu Ho dams.

Earthwork executed.

(a) for repairs ... ... 26,037 fangs.
(b) for new work ... ... 12,398 "

Platforms extended.

Lanchou Loading Stage ... ... 35 ft.
Shanhaikuan Up platform ... ... 186 "
" Down " ... ... 135 "

New buildings erected.

Fengtai Stone's light store	272	sq. ft.
" Train Caterer's quarters	784	"
Tientsin Watchman's house	221	"
" Coal coolies house...	300	"
" Tank house...	57	"
Tongshan Addition to Works Manager's house ...	137	"
Shanhaikuan Traffic Inspector's servant quarters ...	815.10	"
" New lamp room	195	"
" Conductor's quarters extension ...	292.32	"
" Westinghouse brake shop	285	"
Sui-chung-hsien New pump runners quarters ...	384	"
Ning-yuan-chou Guard and Brakemen's quarters ...	140.86	"
Chinchou New axle fitters' shop	120	"
" New lamp room	144	"
" Loco. yard watchmen's house	177.50	"
Kou-pang-tze New telegraph quarters...	1,930	"
Ching-tui-tzu New house for station master... ...	360	"
Chu-liu-ho New telegraph quarters	425	"
Huang-ku-tun Locomotive store	453	"
" Office on Transfer platform	679	"
" Platelayers' cabin No. 56 A	551	"
" Caterer's quarters	819	"
" Additional Engineer's quarters ...	364	"
Total	9,914.78	sq. ft.

Turntables put in. One 55 ft. at Tientsin, the one in use of same size being taken out and put in at Fengtai where the old one required a thorough overhaul.

Heavy works executed.

Yang-tsun to Chang-chuang. All bridges spurs have been rebuilt and neat pitched to stop of 2 or 2½ to 1: about two miles of bank slope re-formed 2½ to 1 and rough pitched and another 1½ miles of low bank re-formed 2 to 1 and neat pitched.
Chang-chuang to Lofa. Four and a half miles of track has been raised so as to have rail level at least 2 ft. above 1912 flood level.
Alterations to station buildings and waiting shed at Chinchou.
Changing 2.42 miles track at Kao-chiao from old section 60 lb. to new section 60 lb.
New landing at Newchwang for ferry boat.
No. 52 Bridge, 23 spans of 30 ft.
Repairs to Liu Ho dams.
Permanent siding of 2.57 miles laid between Huang-ku-tun and Mukden (South Manchuria Railway) Stations.

Foreshore protection.

66 fangs of rubble used at Yingkou.

Wharfage.

Small junk wharf, 100 ft. × 5 ft. built at Chu-liu-ho.

Painting executed for maintenance.

57 Bridges painted.
Chien-men extra tank.
Sui-chung-hsien tank.
Kou-pang-tzu tank.
Tientsin station buildings and signal cabins.
Tongku signals interlocking gear and pointstands.
11 staff quarters at Tientsin and Tongshan.
On Inside Wall District weights on all pointstands have been painted half white and half red to act as point indicators: all lamp cases on station platforms have had the names of stations painted on them.
On Outside Wall District all platform lamps, station benches, whistle posts, signals, staff quarters and station buildings have been painted.

Water supply Works.

Hsu-ko-chuang. A new well 22 ft. deep and 10 ft. diam. has been sunk giving 16 ft. of water. 115 ft. of 4" pipe laid from it to pump.
Tientsin. A small 1850 gall. tank has been erected at East end of station and connected to City mains by 185 ft. of 3" pipe.
Chien-men. An extra tank 10 ft. dia. × 8 ft. has been erected. It was removed from Tungchou River where it was not required.
Sui-chung-hsien Hand pump has been replaced by steam pump and boiler.
Li-chia-wu-pu. A new tank 15 ft. × 15 ft. has been erected.

Works in progress.

Fengtai station building coolies quarters.
Wan-chuang Station building.
Tientsin Central Tsinpu quarters and workshop.
Tientsin East Station building extension.
" " " Metalling roads.
" " " Goods yard road.
" " " Standard Oil Co's Siding.
" " " New sidings east end of station.
Tongshan water supply work.
" New boiler house chimney.
" Extension of pattern shop.
" new shunting siding and alteration to Grid.
Kuyeh new sidings.
Lei-chuang U.S. Military barracks.
Liu-shou-ying Pig stage and siding.
Tongho waiting shed.
Baggage rooms at Tongho, Pei-tai-ho, Changli, Lanchou, and Tongshan.
Shanhaikuan Hospital.
" Bridge works girder shop.
" Shih-ho tank.
Chinchou Loco. Inspector's quarters and Loco. men quarters.
" Boiler house.
Nu-erh-ho New quarters for station master.
Koupangtzu and Yinkou baggage rooms.
Li-chia-wo-pu tank.
Jao-yang-ho Police barracks.
Mukden temporary station baggage room.
Huang-ku-tun Additional room to Traffic Inspector's quarters

Accidents during the six months.

Employees killed	6.	Injured.	7.
Passengers "	4.	"	6.
Trespassers "	24.	"	5.
Animals killed	2.		
Engine and car derailments...			11.
Collisions while shunting in station yards			4.
Train separated			1.
Train or cars on fire			6.
Bridge deck			1.
Minor accidents			22.

Rainfall and floods.

No floods during the six months.
General rainfall averaged 8⅛ inches.

Average Number of Employees, 4,808.

BRIDGE WORKS, SHANHAIKUAN.

The tonnage of work turned out was as follows:—

Girders.

13 spans 30 ft. clear girders	Tons 106. 18. 3. 20.
3 spans 3¾" × 9" × 13' 8" Joist girders	2. 2. 3. 8.
	Tons 109. 1. 3. 0.

Special Work, tank, etc.

1 7' 6" diam. × 7' 10" Water tank	1. 12. 0. 10.
11 sets Smoke jacks	6. 1. 0. 20.
4 12" × 36' 0" × ⅛" steel plate chimneys for Koupangtzu workshop	1. 7. 0. 0.
	Tons 10. 0. 1. 2.

Miscellaneous iron work.

To the extent of Tons 34. 5. 0. 0

Total Tonnage of ironwork done ... ... Tons 153. 7. 0. 2.

Points, Crossings, etc.

During the six months 84 complete sets of Points and Crossings were manufactured and delivered, and 202 sets double and single armed signal posts, fittings, ladders and tripods constructed.

alter the nature of this Railway's special status. The question of the war zone and the standing of the Shantung Railway are two separate problems and of a different nature. It was insisted by the Chinese Government that there is now no actual connection between Tsingtau and the railway line, owing to the investment of that place by Japanese military forces, and that there is no opportunity on the part of Germany to utilise the railway. But viewed from a Japanese military standpoint, governed by the situation in Shantung, it would indeed be very dangerous to leave in the hands of the enemy the section of the Railway west of Weihsien—just in the rear of the Japanese forces. It would be strategically impossible to permit such a thing. Examples are not lacking that the Chinese Government could not restrain the Germans from utilising the railway for warlike preparations and operations."

Upon these reasons Japan pursued her policy of establishing military guards along the railway as far as Tsinanfu, and installing a staff of trained railway men transferred from, it is stated, the South Manchurian railway system; and China has acquiesced in the occupation only under the strongest protest. The insistence by Japan of her right to occupy this railway caused considerable alarm in Chinese circles, and a certain amount of agitation was developed which culminated in members of the State Council at Peking interpellating the Government as to its policy regarding Shantung and the so-called "Japanese invasion." High officials, however, kept their heads, and paid no heed to the jingoistic utterances of some of the military representatives in the Council. The President and his immediate supporters all recognised the futility of resisting by force the violation of China's neutrality. They have painful knowledge that the Exchequer is empty of funds, and that the army is neither large enough nor equipped well enough even to hope to cope successfully with the force which the Japanese could employ by land, to say nothing of the possible operations from the sea; and for those reasons Chinese agitators wasted their breath in vain. The Government decided upon its line of policy immediately the European war showed signs of affecting this quarter of the globe, and that policy was simply to suffer "the slings and arrows of outrageous fortune;" to protest against any encroachment upon China's neutrality, and to trust in justice being done at the end of the war. Moreover the Government is willing for the time being to give Japan the benefit of the doubt by trusting that she really means to stand by her undertaking to respect the integrity of China. The Chinese man in the street thinks contrariwise. He holds the opinion that Japan has come into the province of Shantung to see and to conquer—and thence to spread what he calls "the continental policy." Only the future can tell whether there is wisdom in the man in the street of China, but it is only fair that Japan should at the moment be credited with the highest and best motives in her actions in Shantung.

The rights under which Germany built her fortress at Tsingtau and constructed the railway from Tsingtau to Tsinanfu were embodied in the Convention signed at Peking on March 6, 1898. The Chinese Emperor then engaged, while reserving all rights of sovereignty in a zone of 50 kilometres (100 Chinese li) surrounding the bay of Kiaochow at high-water, to permit the free passage of German troops within this zone at any time, and also agreed to abstain from issuing any Ordinances therein without the previous consent of the German Government. At the same time, "with the intention of meeting the legitimate desire of His Majesty the German Emperor, that Germany, like other powers, should hold a place on the Chinese coast for the repair and equipment of her ships, for the storage of materials and provisions for the same, and for other arrangements connected therewith, His Majesty the Emperor of China cedes to Germany on lease, provisionally for ninety-nine years, both sides of the entrance of the Bay of Kiaochow. Germany engages to construct, at a suitable moment, on the territory thus ceded, fortifications for the protection of the buildings to be constructed there and of the entrance to the harbour."

In Sections 2 and 3 of the Convention the Chinese Government sanctioned "the construction by Germany of two lines of railway in Shantung, the first to run from Kiaochow to Tsinanfu and to the boundary of Shantung Province, via Weihsien, Tsinchow, Pashan, Tsechuen and Suiping; and the second to connect Kiaochow with Chinchow, whence an extension will be constructed to Tsinan through Laiwuhsien." It was stipulated that a Chino-German Company should be formed to carry out this work; the profits derived from the working of the railways to be "justly divided pro rata between the shareholders without regard to nationality."

In addition to these specific railway rights—which were enlarged by an agreement signed at the end of 1913, and a further agreement signed on June 24, 1914,—the Chinese Government agreed to German subjects holding and developing mining property for a distance of 30 li from each side of the railways and along the whole extent of the lines, but these rights were subsequently modified when the extension of the railway agreement was negotiated. Germany, however, had the dominant voice in the province of Shantung with regard to the employment of foreign capital, the Convention setting out:—"The Chinese Government binds itself in all cases where foreign assistance in persons, capital or material, may be needed for any purpose whatever within the province of Shantung, to offer the said work or supplying of materials in the first instance to German manufacturers and merchants engaged in undertakings of the kind in question. In case German manufacturers and merchants are not inclined to undertake the performance of such works or the furnishing of materials, China shall then be at liberty to act as she pleases.

In pursuance of this Convention the German Government granted to a German Company known as the Schantung-Eisenbahn-Gesellschaft a Charter dated June 1, 1899, for the construction and operation of a railway from Tsingtau to Tsinanfu. The Charter stipulated that "the construction and maintenance of the railway shall be proceeded with by a German-Chinese Company," the management of the railway to be domiciled in Tsingtau, and the completion and opening of the line from Tsingtau to Tsinanfu to follow within a period of five years. German material was to be used as far as possible in the construction and equipment of the railway. It was stipulated that the company "shall pay a contribution from the yearly net profits of the railway to be applied to the expenditure of the Government for the harbor works in the Bay of Kaiochow and also to the general running expenses of the Protectorate," such contributions to be "the twentieth part of any surplus over 5 to 7 per cent., the tenth part of any surplus over 7 to 8 per cent., the fifth part of any surplus over 8 to 10 per cent. the third part of any surplus over 10 to 12 per cent., and the half of any surplus over 12 per cent." The German Government reserved the right to purchase the railway after the end of sixty years."

In addition to the railway from Tsingtau to Tsinanfu, the only one so far constructed, the Germans recently concluded an agreement with the Chinese Government whereby a line was to be built connecting Tsingtau with Hsuchowfu, on the Tientsin-Pukow railway, and another line extending from the Yellow River near Tsinanfu, to a point to be decided by survey on the Peking-Hankow railway. To this agreement no effect has been given, and what will become of it in the future remains to be seen. In the meantime the contention between Japan and China is confined to the Tsingtau-Tsinanfu line, the situation at the moment being that Japan has control of it under protest from China. Japan will no doubt operate the railway as efficiently as the South Manchurian railway is operated, and the bridges which were blown up by German employees of the line before their departure will soon be rebuilt and a restoration of traffic effected. Hitherto the administration of the railway was in the hands of the Germans, and by its temporary transference to the Japanese China actually loses nothing—except a little "face."

RUSSIAN RAILWAY PROJECTS

The acquirement from China by Russia of the right to construct a railway from Blagoveshchensk, on the left bank of the Amur River, to Aigun, Mergen, and Harbin, with a connection between Mergen and Tsitsihar, is of great importance politically to Russia and commercially to North Manchuria.

Foundry.

The Foundry has been fully employed upon castings, signal gear, washout pumps, water cranes, railway chairs signal frames and miscellaneous castings for maintenance and construction.

Iron castings to the extent of	Tons 95. 18. 2. 26.
Brass castings „ „ „	1. 8. 1. 20.
Total Tons	97. 7. 0. 18.

Average Number of Employees.

The average daily labour employed including Sundays, Holidays and staff amounts to 357.

ROLLING STOCK EQUIPMENT AT 30TH JUNE, 1913.

	No. of Vehicles	Tonnage	Axles.
10 Ton 4 wheel explosive	6	60	12
Coal car	271	2710	542
Water Tank	7	70	14
Pig Cars	7	70	14
12 Ton Coal cars	469	5628	938
15 Ton Low side	5	75	20
20 Ton „ „	258	5160	1032
Flat	74	1480	296
H. S.	817	16340	3268
12 Ton Pony	38	456	152
20 Ton Covered Goods	97	1940	428
24 Ton H. S.	156	3744	624
L. S.	16	384	64
Flat	1	24	4
30 Ton Covered Goods	165	4950	660
Water tanks	3	90	12
Oil „	40	1470	196
Low side	38	1140	152
H. S.	462	13800	1848
Logging	2	60	8
Total Cars..	2941	59711	10284
Imperial cars	3		12
State cars	3		12
Directors' car	1		4
Family and private	13		40
1st class	27		108
2nd „	37		148
3rd „	103		412
Composite	17		68
Buffet cars	7		28
Postal vans..	4		16
Train de Luxe Equipment.			
1st class Dining cars	3		12
2nd „ „ „	2		8
1st „ sleeping „	5		20
2nd „ „ „	3		12
1st „ saloon „	2		8
2nd „ „ „	2		8
Heating and Lighting cars	4		16
Baggage and Brake Van	5		20
Kitchen	1		4
Brake Vans.			
4 Wheel	49		98
8 Wheel	15		60
	306		1114

LOCOMOTIVES

Passenger.				
4——4——0	Cylinder 17" × 24"	4		
4——4——0	„ 19" × 24"	3		
4——6——0	„ 18" × 24"	13	20	
Freight.				
2——6——0	„ 17" × 24"	43		
2——6——0	„ 19" × 24"	15		
2——6——0	„ 16" × 24"	27	85	
Shunters.				
2——6——2	„ 14" × 24"	13		
0——6——0	„ 16" × 24"	4		
2——6——4	„ 17" × 24"	2	19	
	Total	124		

TENDERS

4 Wheel	3
8 Wheel	83
6 Wheel	26
Total	112

COMPARATIVE TABLE OF ROLLING STOCK

	1912	1913
Passenger Coaches and Brake Vans	302	306
No. of axles	1098	1114
Freight cars of all classes	2974	2041
Tonnage capacity	60555	59711
Locomotives of all classes	123	124
Weight in tons	5598	5649

NEW MACHINERY ERECTED

1 Herberts Filing Machine.
1 Blind Style Mortising Machine.
1 Combined Mortising and Boring Machine.
1 Screwing Machine for water space stays.

Electrical.

The Staff and Police quarters Tongshan had electric light installed. A combined set from the old Imperial train was erected at F.T. to light Loco. and station yard. A 26 K. set was put down in Tientsin shed to charge coach accumulators and light the shed and stores yard. A 15 K. set put into S.H.K. shed to light shed, loco. and station yard. Mukden loco. and car shed and station yard is being wired and equipped for lighting. Current for which will be obtained from the Japanese Power plant.

REMARKS

Locomotives.

The six 19" mogul engines whose construction was sanctioned in 1912 are well advanced, one of which has undergone trials under steam. Works has also commenced on the three shunting engines. Unusual delay was experienced in obtaining material due to strikes in England.

The mileage during March constituted a record for one month (374,270 miles). A want of power was experienced.

Reboilering of 15, 58 and 74 class continued.

Coaches.

Six 3rd class fitted with electric light, Westinghouse system of steam heating and comfortable battend seats, as usual in the first class only a few years ago, and a Second class fitted in a similar style, seats being cushioned went into service on the express between T. S. & P. K. All third class passing through Tongshan Works for repair were equipped with seats round sides and large baggage racks.

Stones system of lighting was fitted to three coaches only one of which however has gone into service as yet.

Freight stock.

New work has all been for foreign lines. The hundred and twenty Kalgan cars are being fitted with the Westinghouse automatic and non-automatic brake in a combined set.

TRAFFIC DEPARTMENT

Train miles run for Revenue...	1,331,314
Train miles run for Construction and Maintenance	26,597
Number of Passengers carried	1,908,032
Number of Tons of Freight carried	1,908,497
Passenger Mileage	152,515,043
Ton Mileage	216,013,194
Total "Passenger Ton" Mileage	368,529,137
Average number of men employed under Traffic Manager including Police Force about 1132	2,985

FAR EASTERN RAILWAYS

CHINA

Canton-Hankow Line.—A consular report, reviewing progress in 1913, says:—A further section of the Canton-Hankow line was opened to traffic on August 1 as far as Sha Hou, 109 miles from the Canton terminus. The next section, of which 20 miles are practically completed, and will shortly be opened to traffic, is estimated to cost $2,000,000, and will take the line to Hsiukuan (Shao Chou). It is not proposed to continue beyond this point until the Hunan section is more advanced towards completion, as the country is sparsely inhabited between Hsiukuan and the Hunan border. Since the opening of the line to Ying Tak receipts are said to have almost doubled themselves, and there is no doubt that they could be still further increased at the present time but for the shortage of freight cars. As mentioned above, traffic on the North River has been practically at a standstill, and junks have often taken more than a fortnight to cover the distance between Hsiukuan and Canton. The result has been a heavier goods traffic than the railway can cope with. A third call of $2.50 a share was made during the latter half of the year, but the company found great difficulty in collecting the money until they threatened to confiscate shares on which calls had not been fully paid up. Since then about 60 per cent. has come in, and hopes are entertained of collecting the remainder. Lack of capital is given as the reason for not commencing the loop line to link up the Canton-Hankow and Canton-Kowloon railways. This line would undoubtedly benefit both railways, and it seems a shortsighted policy to delay its construction, which is estimated to cost $350,000 to $400,000.

Work has not been commenced on the Canton-Macao line, the delay in this case being also ascribed to lack of capital.

Shanghai-Nanking Railway.—The following figures of traffic returns (approximately) for the week ended August 29, are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	47,712	8,461	56,173
1913....	29,008	6,424	35,432
Increase.	18,704	2,037	20,741
Decrease	—	—	—

For nine weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	374,720	90,631	474,360
1913....	296,808	65,760	362,572
Increase.	77,926	33,862	111,788
Decrease	—	—	—

Week ended September 5.

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	47,762	8,642	56,404
1913....	32,954	6,937	39,891
Increase.	14,808	1,705	16,513
Decrease	—	—	—

For 10 weeks.

Year.	Passengers.	Goods & Sundries.	Total.
	$	$	$
1914....	422,491	108,273	530,764
1913....	329,757	72,706	402,463
Increase.	92,734	35,567	128,301
Decrease	—	—	—

Week ended September 12.

Year.	Passengers.	Goods & Sundries	Total for the week.
	$	$	$
1914....	42,203	7,289	49,492
1913....	58,322	6,764	65,026
Increase.	—	525	—
Decrease	16,119	—	15,534

For 11 weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	464,694	115,562	580,256
1913....	388,079	79,410	467,489
Increase.	76,615	36,152	112,767
Decrease	—	—	—

THE PHILIPPINES

Manila Railway Co.—The seventh ordinary annual general meeting of shareholders in the Manila Railway Company (1906), Ltd., was held at Winchester House, Old Broad-street, London, on July 30, Mr. C. J. Cater Scott (chairman of the company) presiding. The Secretary (Mr. J. Mackenzie) read the notice convening the meeting and also the report of the auditors.

The Chairman, in moving the adoption of the report, said that he must admit at once that the results, as stated in the report presented that day, were not so satisfactory as those who had followed the fortunes of the Manila Railway might have expected. So far as the gross earnings were concerned, there was really nothing to complain of, but when they came to the net result it would be found that, first of all, there had been a general increase in working expenditure—which he took to be the experience of nearly every other company throughout the world—thus showing a reduction in net earnings. Then, again, they had to bear a certain amount of increased burden representing interest on capital employed on the Southern lines, lines which had to a certain extent been completed and bonded, but these lines were in a more or less incompleted state. The third item to which he had to refer was the large amount of income tax. Those three items had very largely reduced the accounts of the English Manila Railway Company in the way of net receipts. It was only fair to add that every railway company carrying out a very large scheme of construction necessarily involved the locking-up from time to time of a large amount of capital, and, while the expenditure of this capital was not fully remunerative, it had earned its full interest charges, and the directors were able to pay a small dividend on the preference shares, and, at the same time, increase the amount of the carry forward. Under these circumstances he thought they must all admit that the railway had not done badly. With regard to working expenses on the Northern line, taking the years 1904 to 1911, inclusive, it would be found there had not been a great deal of variation in the working expense ratio, which had been about 43 per cent. to about 44 per cent., except in the year 1908, when they were 45.64 per cent.; but in 1912 there was a considerable increase, for in that year it reached 46.37 per cent., and in 1913 they were 47.28 per cent., which was an increase of nearly 1 per cent. over the expenses of the previous year. As to the Southern lines, in the last three years there had been very steady and large increases in the working expenses, as well as in the receipts, which he confessed he was not altogether prepared for, but there were certain matters to which he would refer, showing how this expenditure had arisen. First of all, the Northern lines were 20 years old, and in 10 years their goods traffic had grown from 146,000 to 695,000 tons. That was on the Northern lines alone, and their passenger traffic had grown from 1,335,000 to 6,335,000. In order to deal efficiently with these goods and passenger traffic it had been necessary to strengthen their bridges and other works in order to carry the heavier locomotives which were required. Then there was another matter on the Southern lines which had led to the increase in the working expenses. The mileage on those lines was developing very rapidly. Perhaps the shareholders hardly realised what this development meant. For instance, in 1910 they had 70 miles in operation, in 1911 103 miles, in 1912 154 miles, in 1913 174 miles, and by the end of this year they expected to have 254 miles, so that in the five years they would have risen from 70 miles to 254 miles of track in operation. When they had more miles to operate it necessarily required an increased staff. Then there was another difficulty they had to contend with. They were the only railway in the island of Luzon, and from the day when they turned the first turf of the line, some 20 years ago, they had had to train practically every member of the staff out of the raw material which was at their disposal. There was really no reserve of skilled labour in the island. They had, therefore, to educate everybody, and he considered that it was greatly to the credit of Mr. Higgins that he had been able to surround himself with such an excellent staff produced from such raw material.

The policy of the board was not to run "Flying Dutchmen," or anything of that sort, but to maintain the road in good working order, and to conduct the business efficiently. The company really required something useful in the way of a railway, and desired that it should be kept in good working order. (Hear, hear.) It would be noticed from the report of the American company that a sugar mill was being erected at Calamba, and that there were other smaller sugar mills to be erected elsewhere, and all that could be said was that they wished them every possible success, as it would undoubtedly lead to the improvement of the traffic of the railway. A short branch of four or five miles would have to be constructed to these mills, which would be capable of producing something like 20,000 tons of sugar, and, if the cane was there, and given good seasons, there was no doubt it would be, and there was no doubt those mills would be prosperous. Then, again, he ought to add that as they pressed forward to the southern portion of the island they would be able to tap the districts which produced hemp and copra, and he believed that when they got into those districts they would secure a valuable traffic in both those commodities. The task of construction during the last few years had been somewhat heavy and anxious. In 1908 they had 208 miles in operation, in 1913 479 miles, being an increase of 271 miles, and by the end of the present year they expected to have 550 miles in operation, and in the middle of 1916 610 miles, leaving, after, that date, only 110 miles to finish the programme of construction.

When they were building all this mileage, of course, it had to be paid for, and the only way it had been paid for was by issuing bonds from time to time. It had not been a favourable time for issuing these bonds, and they either had to issue them at a higher rate of interest or accept a lower price for them. In any case the company in such circumstances, would be, and were, heavily hit. The directors in 1910 foresaw this trouble, though he was sorry to say not to its fullest extent. At that time, the Northern section was practically completed, and the first charge of the "A's" and "B's" earned last year £208,000, as against interest amounting to only £155,200. The Southern section was financed by 4 per cent. guaranteed bonds, which were guaranteed by the Philippine Government under

an Act passed by Congress at Washington, and when the company agreed to build the line on those guaranteed bonds they did not anticipate that there would be any difficulty in selling them, but in this respect they had been disappointed, owing to the fall in prices. These bonds had failed to realise the cost of construction, and the deficiency would have to be made good out of the proceeds from the "A" and "B" bonds, which was a second charge on the Southern section. Therefore, the board proposed to modify their scheme, and to do that the assent of the authorities would have to be asked. The Chairman then proceeded by means of the map to explain the proposed modification. Next, he proceeded to deal with the accounts of the English company, and explained that they had received the full amount of interest on bonds held in the American company. There was a balance available for dividend of £123,940, and the board recommended a dividend at the rate of 1 per cent. on the preference stock, and to carry forward £103,940 to the next account. He concluded by moving the adoption of the report and accounts.

Mr. R. G. Phillpotts seconded the motion.

In reply to questions the Chairman said that the modified programme of construction should be completed about the spring of 1916, leaving the remaining 110 miles to be finished at a later time. A certain amount of money had already been spent in the South, and they thought it worth while to complete the construction of the line there in order to secure the guaranteed bonds. Moreover, they believed that the line, even though separated from the rest of the system, would fully pay for itself. With reference to the provision of funds, they had a certain amount in hand in the way of stocks, but they would have to make an issue of bonds for construction purposes. The Chairman did not think it was desirable to distribute among the shareholders any of the balance of £103,000. In the difficult times through which they were passing it was much wiser to retain it. He was now discussing a scheme for the allocation of a certain portion of that balance to open a proper renewal fund, which would be a very useful thing. The resolution was then put to the meeting and unanimously adopted.

On the motion of the Chairman, seconded by Admiral Sir Cyprian A. G. Bridge, G.C.B., a dividend of 1 per cent. on the preference stock for the year payable on July 31 was declared.

The retiring directors, Mr. R. B. Phillpotts and Mr. E. J. W. Byrne, and the auditors, Messrs. Deloitte Plender Griffiths and Co., were re-elected, and a vote of thanks to the chairman and directors and to the staff at home and in the Philippines concluded the proceedings.

MANCHURIA

South Manchuria Railway.—The returns for the month of August yielded the daily average of Y38,074, being a decrease by Y3,379 from the corresponding month of last year.

FINANCIAL

Hongkong and Shanghai Banking Corporation.—The ordinary half-yearly meeting, followed by an extraordinary meeting of shareholders, was held at Hongkong at noon on August 22. The Hon. Mr. D. Landale (Chairman of Directors) presided.

The CHAIRMAN said:—I think you will agree that the accounts disclose a satisfactory state of affairs. We propose, subject to your approval, to make the following distributions of the profits:—

Dividend £2 3/- per share subject to income tax.

$350,000 added to silver reserve.

$400,000 written off Bank premises account.

After providing for this, there remains a profit of $2,089,038.44 to be carried forward, being about $20,000 more than the amount brought in from the last account. (Applause.) With regard to the dividend, your directors decided that it was desirable to follow what has now become the prevailing practice, and to declare the dividend subject to the deduction of income tax instead of free of income tax as formerly. After careful consideration, we are recommending an increased dividend, and in making this change we considered it desirable to increase the dividend by an amount approximately equivalent to the income tax levied at present and, should circumstances permit, to do the same at the end of the current year. I trust, gentlemen, that this procedure will meet with your approval and that you will also approve of the other appropriations which we recommend. (Applause.) Three weeks ago I hoped to address you with regard to the balance sheet, and to the prospects of business in China generally in an optimistic frame of mind.

The figures of the balance sheet show a healthy expansion in every direction, and the total of our assets and liabilities is the highest recorded in the history of the Bank. (Applause.) Our gold securities, taken at the market values ruling at the end of the half-year, showed a very handsome surplus over the values at which they are standing in our books. The outlook for China was full of promise, the Central Government steadily introducing order and authority throughout the provinces, the Maritime Customs revenue collections for the present year being the highest on record, and the collections of the salt inspectorate under the able direction of Sir Richard Dane exceeding the most sanguine expectations. Everything pointed to prosperous times ahead, but the tremendous events now happening in Europe have upset commerce all over the world.

It is useless at this juncture to speculate as to how the nations will emerge from this terrific struggle, and what the effect of it will be on the conditions in China and the other countries in whose trade we are interested; but one certain result will be widespread disorganisation and distress. With our far-reaching interests we can hardly hope to escape without some loss. Thanks, however, to the policy of strengthening the reserves which has been steadily pursued for many years by the directors, with the consent and approval of the shareholders, the Bank is in a very commanding position, and able to face with equanimity any situation which may reasonably be anticipated as the result of the appalling war now going on. (Applause.) It will be seen from the balance sheet that the cash position of the Bank at the end of the half-year was unusually strong. We have accordingly been able to meet freely any unusual demands which our constituents have been obliged to make on us as a result of the dislocation of business, and it will be the policy of the Bank to assist the public by continuing to give facilities on the ordinary terms with the object of minimising the disturbance to trade as far as possible. (Applause.) Here, as in other Eastern ports, there has been some excitement among Chinese caused by absurd rumours spread by interested parties, and many poor people have fled from the Colony. It cannot be too strongly impressed on the Chinese generally that their persons and property are perfectly safe here, and that apart from the interruption to overseas trade, business will proceed as usual. Let us hope that the more influential members of the Chinese community will use every exertion to bring an end to this condition of unrest and uneasiness. (Applause.) Mr. Stabb, our Chief Manager, left last May on a hard-earned holiday, but immediately upon the European position becoming critical he at once offered to curtail his leave and will probably return some months earlier than was originally intended in order that the chief officers of the Bank may all be at their posts to cope with any difficulties that may arise under the exceptional circumstances which now exist. It has no doubt been of assistance to the London management to have Mr. Stabb in London during the past few weeks. I would like to take this opportunity of saying, gentlemen, that your directors have every confidence in Mr. Stephen, your Acting Chief Manager, and you may rest assured that every care is being taken to safeguard the interests of the Bank. (Applause.) As mentioned in the report, your directors have had to regret the death of their colleague, Mr. Friesland, who joined the board in 1908, and who took a keen interest in the affairs of the Bank. We had in him a zealous and loyal colleague and we deplore his untimely death. The provisional Committee which met in August, 1864, to discuss and arrange the formation of the Bank contained a German member, and since then the board of directors has never been without one or more German representatives. For reasons which will be apparent to you, and which I need not enlarge on, our German colleagues have resigned their seats. The directors wish to record their personal regrets at the withdrawal of those gentlemen, with whom they have always worked in perfect harmony. Before moving the adoption of the report and accounts as presented, I shall be pleased to answer any questions you may put to the chair.

There were no questions, whereupon,

The CHAIRMAN proposed the adoption of the Report and Statement of Accounts, as presented.

Hon. Mr. H. E. POLLOCK seconded, and said —I have great pleasure in seconding the adoption of the Report and Statement of Accounts, which are of a most satisfactory character. During the past few weeks trade conditions have been seriously disturbed by the war, but it is my firm belief that we shall shortly witness a marked improvement in these conditions in this part of the world, and that the strong financial position of this Bank, with its large reserve funds, enables the shareholders to look forward to the future with calmness and confidence. (Applause.)

The motion was then put to the meeting and carried unanimously.

The appointment of Mr. G. T. M. Edkins as Director was confirmed.

At an extraordinary meeting held later the Directors were authorized to seek sanction from the Government for the amendment of the Ordinance which governs the constitution of the Corporation, and to ask that the Corporation should be empowered generally to take security without restriction from its constituents by way of mortgage of leasehold lands in Hongkong, or of lands in other places, as security for general banking facilities, and also to hold meetings once a year instead of twice annually.

Yokohama Specie Bank.—The following is the gist of the speech delivered by Mr. J. Inouye, president of the Yokohama Specie Bank at the general meeting of its shareholders on September 10: Gentlemen, in submitting to you, shareholders of the Yokohama Specie Bank, a general report on the business transacted during the first half-year at this sixty-ninth general meeting of the bank, I have the honor to make a general statement on the economic status at home and abroad as well as on the existing condition of our bank business.

The general condition prevailing in our economic world during the first six months of this year is as follows. In consequence of a fall in the price of rice the purchasing power of the farmers had decreased; which in turn deterred enterprises, dispirited the stock market, and depressed commerce. Goods accumulated in warehouses and the cry of "hard times" was heard both in town and country. As a result of this, however, foreign imports had remarkably decreased, and exports showed signs of increasing. And this made us hope the time had arrived in which we could realize our long-cherished but long-unfulfilled desire of equalizing our exports and imports. Thus we were led to believe the present adverse state of affairs would be a cause for future prosperity in store for us, so that we

To be distributed:—	
Legal reserve	2,565.00
Secondary reserve	3,600.00
Bonuses and social expenses	3,000.00
Dividend at 7 per cent. per annum..	42,000.00
Carried forward to next account ..	2,430.14

Oji Paper Mill Co.—The profit and loss account for the last half year was as follows:

	Yen.
Net profit for the term	433,337 31
Brought over from last account ...	101,722.53
Total	535,059.84
To be distributed:	
Legal reserve	22,000.00
Fund against accidents to the plant	64,210.55
Dividend at 9 per cent. per annum	270,000.00
Pension reserve...	15,000.00
Carried forward to next account...	125,849.29

A proposal for the augmentation of the company's capital to 12,000,000 yen from 6,000,000 yen was referred to the meeting and the proposal was passed with unanimous vote. New shares representing the increased capital were to be issued to the original shareholders at the rate of one to every old share toward the end of August, the first instalment on them to be called September 21.

Taihoku Sugar Mill Co.—At the ordinary general meeting of shareholders the following profit and loss account was passed:—

	Yen.
Net profit for the half year	153,988.95
Legal reserve	9,000.00
Fund for the depreciation in the fixtures	8,500.00
Dividend at 8 per cent. per annum	120,000.00
Fees for officers...	10,000.00
Pension reserve	1,200.00
Carried forward to next account ...	5,288.95

Tainan Sugar Mill Co.—At the ordinary general meeting of shareholders the following profit and loss account was passed:—

	Yen.
Net gains for the half year	122,525.11
Legal reserve	3,000.00
Sinking funds for fixed capital ...	5,000.00
Pension and other funds	60,000.00
Dividend at 4 per cent. per annum	40,800.00
Fees for officers...	3,000.00
Carried forward to next account...	8,725.11

Taiwan Sugar Mill Co.—At the ordinary general meeting of shareholders the following profit and loss account was passed:—

	Yen.
Gross receipts for the term	2,300,815.60
Sinking fund for fixed capital ...	150,000.00
Balance (net gains for the term)...	2,150,815.60
Brought over from last account ...	56,707.22
Transferred from dividend equalization fund	190,000.00
Total	2,397,522,83
To be distributed:—	
Legal reserve	108,000.00
Bonuses and social expenses... ...	120,000.00
Dividend at 12 per cent. per annum	2,111,400.00
Carried forward to next account...	58,122,82

MINING

Mineral Deposits of the Amur, Siberia.—M. Bordeaux, in a communication to the *Société de l'Industrie Minerale*, recently described the mineral deposits of the Amur district. Outside of the quartz veins of Askold Island, gold is only found in the alluvials of the Coast Province. During the past few years the production of gold in the Vladivostok district has ranged between 1,244 and 4,416 ozs. The rivers are, however, becoming exhausted, and search is being made in the interior along the affluents of the Ussuri, and near Lake Hanka. The Askold mine, situated on an island near Vladivostok, has been worked for thirty years, and has produced about 28,000 ozs. of gold. Opposite the island on the mainland are some auriferous veins containing quartz, antimony and arsenic, but they remain unworked. During the last decade several small deposits of argentiferous galena and blende have been opened, the most important of which is at Tétinhé, 240 miles north of Vladivostok and twenty-four miles from the coast, with which it is connected by a railway. There is a little grey copper with the ores, and the richness in silver depends on the presence of the copper and galena. Six levels, totalling a length of over 2,000 fathoms, have been driven one over the other within a depth of 550 ft. Other similar accumulations of ore are worked at Tatuché, Olga, Djighit, Préobrajénié, &c. These deposits in the maritime province may be compared to those worked in the Nertchinsk district of the Trans-Baikal, where there were 448 mines, seventeen of which are important. They have been long worked in a perfunctory manner by convicts, and from 1703 to 1903 produced only 1,470,000 tons. The calamine mine at Tétinhé, near the deposit of argentiferous galena, was opened in 1907, and is now the largest mine in the Coast Province, employing more than a thousand workmen. In 1912, 80,000 tons containing 43 per cent. of zinc were exported. The sulphides of galena and blende are at the contact of porphyry and limestone, whilst the calamine has replaced the limestone. Copper is known to exist in the Coast Province, but has been little prospected. In Siberia there is a bounty of £12 per ton on copper produced in the country, and also one of £4 per ton on lead. Chrome has been found in the Ussuri district in serpentine, and indications of mercury and platinum in the Anadyr valley.

Kailan Mining Administration.—The total output of the Administration's mines for the week ended August 22 amounted to 45,515.75 tons and the sales during the same period to 43,220.75 tons.

Week ended August 29, output 47,082.12 tons, sales 47,216.81 tons.

Week ended September 5, output 44,362.61 tons, sales 41,791.71 tons.

Week ended September 12, output 43,685.55 tons, sales 44,128.70 tons.

PERSONAL

On account of the war Dr. G. E. Morrison and Sir Richard Dane have curtailed their leave and have returned to China.

With regret we record the death of Mr. F. K. Tsao, the chief English Secretary to the Managing Director of the Tientsin-Pukow Railway.

Dr. Henry C. Adams, late Adviser to the Commission for the Unification of Railway Statistics and Accounts in China, has been given a Fifth Class Chia-ho decoration.

Lord ffrench, the representative in China of Messrs. Pauling and Co. has gone to England on leave.

Mr. Alfred Sze, Chinese Minister to London, has left to take up his post.

Colonel Sibert and the other members of the American Red Cross Hwai River Commission have sailed for America.

Mr. A. W. U. Pope, formerly General Manager of the Shanghai-Nanking Railway, has joined the British army on the Continent as a volunteer.

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TYPES OF LOCOMOTIVES

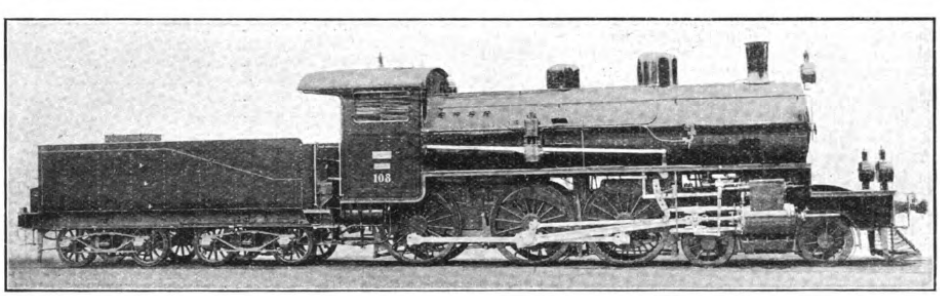
MESSRS. HENSCHEL AND SOHN

Illustrations herewith show some types of locomotives supplied to the Far East by the Locomotive Works of Messrs. Henschel and Sohn of Cassel, Germany. The first is a 4:6:0 passenger locomotive supplied to the Tientsin-Pukow Railway.

This engine has the following chief characteristics:

Gauge...	1435 mm
Diameter of steam cylinders	540 mm
Stroke of pistons	630 mm
Diameter of drivers	1750 mm
Diameter of truck wheels	1000 mm
Rigid wheel base	4300 mm
Total wheel base	8100 mm
Working pressure	13 kil. p. sq. cm
Heating surface of fire box...	13,77 sq. m.
Heating surface of boiler tubes...	160,93 sq. m.
Heating surface, total	174,70 sq. m.
Grate area...	2,61 sq. m
Weight empty	61000 kilos
Weight in working order	68500 kilos
Adhesive weight	48000 kilos

The locomotive has three pairs of coupled wheels, the middle pair of which are the driving wheels, and a 4-wheeled bogie in front. The boiler barrel, having a mean diameter of 1700 mm, is equipped with 294 steel boiler tubes of 46-41 mm diameter. The water space between the single tubes at the fire box tube plate is 34 mm, and the length of tubes between the 2 tube plates, is 4250 mm. The fire box shell is placed between the frame plates and encloses the deep down reaching copper fire box. On account of the very clinkery quality of coal to be burnt by the engines, a rocking grate is provided. The mountings of the boiler consist of 2 pop safety valves, system Coale; 2 steam injectors system Schäffer and Budenberg, each of an output of 180 litres per minute; 1 water gauge with 3 test cocks; 1 boiler filling cock; 2 boiler feed valves; 1 steam whistle; 1 steam gauge, with test gauge cock. The throttle valve of the Schmidt and Wagner type is placed inside the dome and can be operated from the engine cab.



Passenger Locomotive supplied to the Tientsin-Pukow Railway.

The frame is formed by two strong and substantially built up plates of 30 mm thickness which are well stayed to each other by means of longitudinal and cross stays as well as by the buffer plates and the coupling box.

The steam is distributed by means of Hoff balanced flat slide valves, which are operated by the Heusinger valve motion.

The double roofed engine cab has glass windows which can be replaced in the summer by wood shutters.

The compressed air Westinghouse brake acts on one side of the driving and coupled wheels as well as of the wheels of the tender. Besides this a hand lever brake for the tender is provided. The engine is further equipped with a compressed air sander for sanding the driving wheels, a de Limon steam driven lubricator for pistons and slide valves, a steam heating arrangement, and a cow catcher in front of the buffer beam.

The tender holds 20 cubic metres of water and has a coal capacity of 6,000 kilos. It rests on 2 four wheeled bogies and has a weight empty of 22,500 kg; its weight in working order is 48,500 kg.

The draw and buffing-gear consists of an automatic claw coupling, system Henricot, with a release device, which is operated from the side.

The next is a 0:6+6:0 Mallet superheated steam locomotive with tender, supplied to the Japanese Government Railways.

This locomotive is designed for hauling goods trains of about 400 tons gross weight on gradients of 20 0/00 at a speed of 25 kilometers per hour, and goods trains of 1400 tons gross weight at a speed of about 45 kilometers per hour on the level. The engine must be able easily to take curves having a radius of 90 meters. The required high tractive force combined with the narrow gauge of 3.6 (1,067 mm) necessitates 6 pairs of driving wheels which arrangement with regard to the curves can satisfactorily be found in the Mallet type only.

The engine has therefore two groups of frames, each with 3 pairs of coupled wheels. Both groups are flexibly articulated whereby each of them can easily accommodate itself to the radius of the curve.

The boiler is rigidly fixed to the rear frame; above the cylinders it is kept in position by means of a cast steel saddle piece riveted to the latter. Whilst thus side movements of the boiler are prevented, it may expand forward and backward. The boiler is amply dimensioned and, in order to increase its capacity, is fitted with Schmidt's superheater, which is placed inside of 16 flue tubes of an outside diametre of 140 mm. From the throttle valve in the dome, the steam enters, at the front-tube plate, the superheater header, then passes the superheater tubes placed in the 16 large flue tubes and returns to the superheater header. Through this process the temperature of the steam is raised to 330-350 centigrades. From the superheater header the steam flows now through two pipes fitted at the end with glands and conducted along the outside of the boiler, to the H. P. cylinders, from where the last axle of the rear group is driven. After having worked in the H. P. cylinders, the steam is conducted through a receiver which on its both ends is flexible in glands and which are movable in the longitudinal direction to the L. P. cylinders driving the front group of wheels. From there it passes through a flexible exhaust pipe and escapes through the chimney. In order to facilitate the engine especially when starting and hauling heavy trains, live steam can be admitted to the receiver through a valve connected to the valve gear, when the latter gives large admissions of steam to the cylinders. All cylinders have piston valves with inside admission, which valves are moved by Heusinger gear. The valve gears are guided by each other, the low pressure gear is, however, arranged in a manner that it will always give a somewhat higher admission than the high pressure gear. The piston valves and steam pistons are lubricated by means of grease pumps, the high pressure cylinders by one with 6 feeds and the L. P. cylinders by one with 4 feeds, both being driven by the H. P. valve links.

The frame, of the American bar frame type, is substantially braced by cross stays. The springs of the rear frame axles are placed in suitable openings of the frame and are carried by axle boxes resting on balancing beams. The springs of the front truck are placed in the usual manner above the axle boxes and frame, and are also connected by balancing beams. As the front trucks of such engines tend to hunt, when running in the straight, a strong centering spring is placed beneath the smoke box, which considerably reduces the movements of the front truck. This spring serves besides to centralize the front bogie, when the engine is leaving curves.

The tender is carried by 3 pairs of wheels and holds about 12.5 tons of water and 3-4 tons of coal. The front axle of the tender is rigidly fixed to the frame, whilst the second and third axles are united to a bogie of the Diamond type. The tender is therefore able to pass through every curve with facility.

Both engine and tender are braked by an automatic vacuum brake; three brake cylinders act on the locomotive wheels and one on the tender wheels. Besides this a powerful hand brake for both engine and tender is provided.

Apart from the usual mountings, etc., of the boiler among which there is also a rocking grate, the locomotive as a special device for cooling, on runs over long distances, the brake blocks by water from the tender. There are further 2 sand boxes, one for each steam truck. The cab is very spacy.

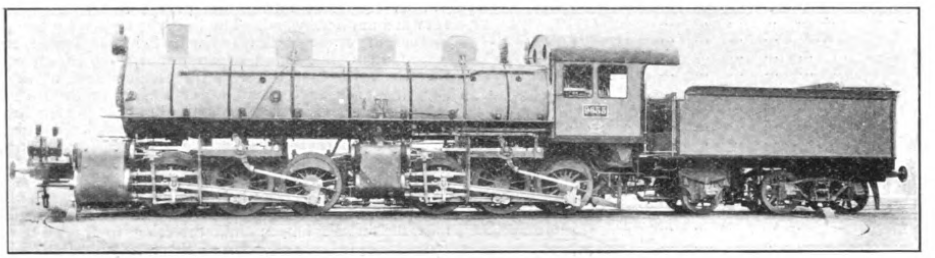
The third is a 0:6:2 tank locomotive for the Japanese Government Railways.

This type of engine, a large number of which was supplied to the Japanese Government Railways, has the wheels as well as the slide valve chests and the valve motion inside the frame, whilst the cylinders are placed outside. The engine has three pairs of coupled wheels, the middle of which are the driving wheels, and a two-wheeled rear radial truck. Its chief outlines and charateristics are the following:

Gauge...	1067 mm
Diameter of Steam Cylinders	406 mm

Stroke of pistons	610 mm
Diameter of Drivers	1245 mm
Diameter of truck wheels	965 mm
Rigid wheel base	3820 mm
Total wheel base	6020 mm
Boiler pressure	11,2 kil. p. sqcm.
Grate area	1,34 sq. m.
Heating surface	94 sq. m.
Water Provision	6,8 cb. m.
Coal Provision	2,1 cb. m.
Weight, empty	about 38000 kil.
Weight in working order	about 50500 kil.
Adhesive weight	about 40000 kil.
Tractive power	5420 kil

Boiler: The boiler has vaulted fire box shell crown running out in the boiler barrel and is fitted with a deep copper fire box, which has a straight crown sloping towards the back. Crown and side plates consist of one single piece. The corners are made of large radius. The crown of the fire box is supported to that of the fire box shell by means of mild steel stay bolts, the front four rows of which are made flexible. Above the fire box crown the fire box shell is braced by means of cross stays. The straight side plates as well as the front and rear plate of the fire box are stayed by copper stay bolts with holes drilled in at each end. The top and front rows of stay bolts of the side plates are made of Stone's bronze and have four slits with a view to making them particularly flexible. The back plate of the firebox-shell is connected to the smoke box tube plate by means of longitudinal stays.—The longitudinal seams are butt-jointed and double riveted, the cross seams overlapped and single riveted. The boiler barrel has a average diameter of 1,230 mm and is fitted with 192 brass boiler tubes of an outside diameter 1¾," the ends of which are protected against burning through by steel ferrules. From the top part of the steam dome which is placed on the boiler barrel, the steam is allowed to flow to the cylinders by means of a throttle valve.

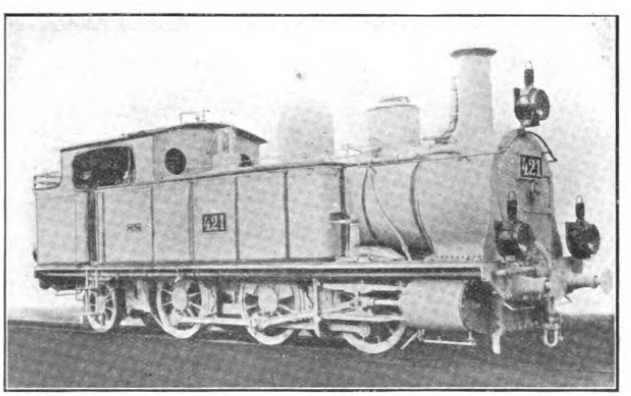


Mallet super-heated locomotive supplied to the Japanese Government Railways.

Mountings: The boiler is fitted with a spring loaded double safety valve, 2 water gauges with ball lock, 2 combined Gresham and Craven injectors, 1 Bourdon steam gauge, 1 test steam gauge, 1 blow off cock, 1 blower cock and two steam whistles mounted on a common bracket.

Frame: It consists of two side plates, which are substantially braced by means of strong sheet and angle irons as well as by cast steel stays. On the front and rear are strong cross plates, to which the buffers and draw hooks are fitted in accordance with the specification of the Japanese State Railways.

Motion Gear: Axles, tyres, connecting, coupling, and piston rods are of Siemens Martin steel, whilst the wheel centres are of cast steel. The axles box bearings are of gun metal and have white metal linings. The cast steel axle box bearings can be adjusted by means of adjusting wedges. The radial axle is kept in its central position by a spiral spring, which has an increasing return power. The engine is carried by laminated springs, which are placed below the compound axles and above the truck axle. The springs of the two front axles are united by compensation beams.



Tank locomotive supplied to the Japanese Government Railways.

Valve Motion. The steam distribution is done by simple plain gun metal slide valves operated by the Stephenson valve motion. The engine is reversed by means of a lever.

Cab. The locomotive has a spacy cab, which is provided with a roof to protect the staff. The two windows in the front and the back of the cab as well as those provided on either side enable the driver closely to watch the track. On account of the special climatic conditions, which were to be taken into consideration, the engine was fitted with a double roof of teak wood.

Water Tanks and Coal Bunkers. The water tanks are placed on either side of the boiler and are projecting into the cab. Another tank is arranged behind the cab and carries in its upper part the fuel provisions. As the majority of coal and water provisions are resting on the rear truck axle, the adhesive weight is not sensibly influenced by the variations of weight of the fuel and water provisions.

Brake. The engine is fitted with a screw brake and a vacuum brake, made by the Vacuum Brake Company, both operating the same rigging and acting on the brake blocks of the coupled wheels.

Sander. When running forward the engine is sanded by the cast iron sand box placed on the top of the boiler, whilst at the backward run sand is taken from two boxes placed underneath the running board. All sand boxes are operated from the cab by sand.

Lagging. Boiler and cylinders are provided with tightfitting sheet coverings.

Pistons and slide valves are oiled by a Wakefield lubricator. The engine is provided with all necessary tools and appliances. All materials were made in accordance with the specification of the Japanese Government Railways.

Finally there is a 0:8:0 Tank Locomotive with front and rear adjustable axle of the Klien Lindner type; supplied to Java.

This type of locomotive, has been supplied in great quantities to sugar plantations on Java. In order to meet the requirements of the purports, it is destined for, the locomotive is fitted with four pairs of coupled wheels, the front and rear of which are adjustable and of the Klien Lindner type. The wheels are placed inside the frame, whilst the cylinders and the motion gear are arranged on the outside. The main features and outlines of this locomotive are the following:

Gauge	750 mm
Diameter of cylinders	240 mm
Piston stroke	300 mm
Diameter of wheels	630 mm
Rigid wheel base	800 mm
Total wheel base	2300 mm
Boiler pressure	12 kil. p. sq. cm.
Grate area	0,49 sq. m.
Heating surface	24,1 sq. m.
Water provision	2, - cub. m.
Fuel provision	1,5 cub. m.
Weight, empty	about 11000 kil.
Weight in working order	about 14800 kil.
Tractive power	1980 kil.

Boiler. It is of the ordinary locomotive type and has a copper fire box with a flat crown, which is running out into the side plates in a large radius. The fire box crown is united with the crown of the fire box shell by means of iron crown stays. The straight side plates as well as the front and back plates are braced by cross stays. The back part of the fire box shell and the smoke box tube plate are strengthened in their top part by means of plate stays. The longitudinal seams of the boiler are double, the circular ones single riveted and in either case overlapped. The boiler barrel is fitted with seamless drawn mild steel boiler tubes and carries on its top part a dome, from which by means of the regulator the steam is admitted to the cylinders. The boiler is fitted with all accessories and fittings prescribed by the Dutch Indian Law for land boilers.

Frame. The frame is placed outside the wheels and consists of two lateral plates thoroughly braced by cross stays. On the front and rear ends of the frame strong buffer beams are fitted, which carry the draw and buffing gear. The front and rear coupled hollow axles allow of axial and radial play and ensure a smooth rounding of curves.

Driving Gear. Axles, tyres, driving, coupling, and piston rods are of Siemens Martin steel, whilst the wheel centres are of cast steel. The slide bars are of mild steel, forged, and have case hardened wearing surfaces. All bearings are of best bearing metal and have white metal liners. All eyes, forks, and bolts of the valve gear parts are case hardened.

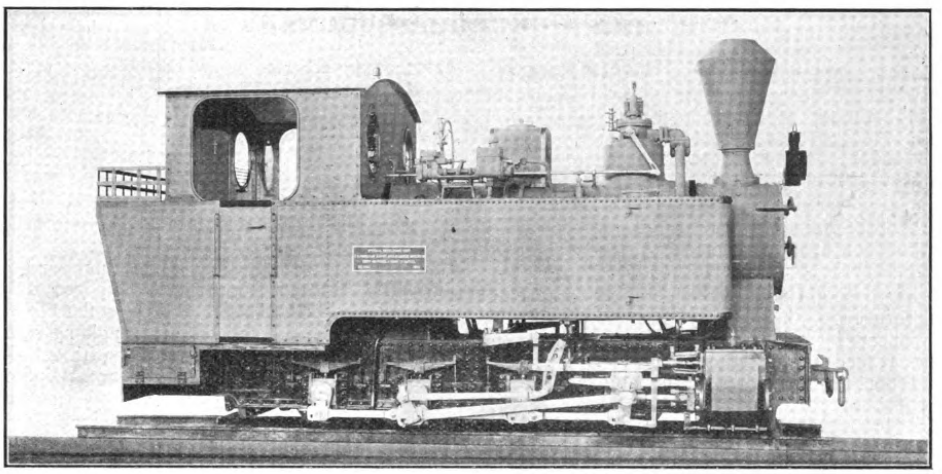
Valve Gear. The steam is distributed by a simple flat slide valve, which is operated by the Heusinger valve motion. The engine is reversed by means of a lever.

Cab. The spacy cab is covered by a roof.

Tanks and Bunkers. The water tanks are placed in front of the cab on either side of the boiler, whilst for the fuel a bunker is provided behind the cab across the frame.

Brake. The engine will be fitted with a counter-weight and a steam brake, which operate the same rigging and act on the middle axles. There is further a counter steam brake, which will be put in action when the engine is passing long and steep slopes.

The chimney is of American design and constructed as a spark arresting chimney. Boiler and cylinders are protected against loss of heat through radiation by means of sheet covering. A central lubricator oils cylinders and slide valves. The sand box is placed on the top of the boiler and operated by hand; it renders it possible to sand the wheels in either direction. The engine is equipped with all necessary tools and appliances. The materials used for the construction are made in accordance with specifications of the Prussian State Railways.



Tank locomotive supplied to Java.

(*Continued from page 140*)

The machinery in use is partly of American manufacture and partly of Japanese. Power is supplied by a gas-producer plant using oil for fuel. There appear to be no competent engineers employed, and only a few Japanese mechanics. A case of 10 gallons of the company's oil sells in Sianfu for about $3.50 U. S.

Apart from the shortage of labor mentioned the greatest handicaps under which this enterprise suffers at present are lack of transportation facilities from the wells to distributing centers, and insufficiency of cipital. The wells are situated in Yenchang district and are about 150 miles from Sianfu in a northerly direction. They are close to a small tributary of the Yellow River, some 20 miles above its junction with that stream. This waterway forms the only practical route for shipping the oil out; at best, it is unsatisfactory and comparatively expensive. Yenchang district being over 100 miles north of the proposed line of the Hai Lan [Haichow-Lanchow] Railway, no relief can be expected from the construction of that line. Possibly the projected railway from Taiyuanfu in Shansi to some point in Szechwan may pass somewhere near to the wells. The company requires more capital, which, however, it is unable to secure at present, owing to the general dislocation of trade consequent upon the revolutionary disturbances and to the stringency of the Shensi money market.

CHINESE POSTAL SERVICE.

Of the innovations and modern methods introduced by the foreigner into China, few are more appreciated than the postal service. Originally a branch of the maritime customs, maintaining a limited service between the principal ports, the Chinese postal service has been developed during the last 20 years until it is now possible to mail letters into practically every district city in China, while domestic postage rates on letter mail are lower than in the United States. An efficient and popular money order system is in operation between the principal offices, which, in many interior districts, affords the only safe way of remitting funds from place to place. Despite the fact that there is no steam transportation of any sort in Shensi, the postal service has opened more than 180 offices in the Province, which are maintained by about 6,000 miles of courier lines and is constantly opening up new offices. A parcels service is in operation, for which pack mules are used, while the fast letter service is maintained by a day-and-night foot courier, covering 60 to 70 miles per day.

SHANGHAI MUNICIPAL ELECTRICITY DEPARTMENT

The tender of Messrs. Andersen, Meyer & Co., has been accepted for the supply of eight 80 H. P. 3-phase motors for the Shanghai Municipal Electricity Department.

Following are the tenders received:—

Jardine, Matheson & Co., Ld	£1,441.10
Siemens China Co.	1,130.0
Anderson, Meyer & Co	1,009.5

GERMAN TRADE IN CHINA

Before the outbreak of war an article was published in a Leipzig paper calling attention to the insufficient interest taken in Germany in the possibilities of trade development in China. The article, which is said to be written by a member of the Stötzner Szechuan Expedition, remarks that the German merchant is not as active as his competitors in China. The annual value of the imports from Germany only amounted in 1913 to about £4,270,000 or about 5 per cent. of the total imports, whereas the imports from the British Empire amounted to 56 per cent., from Japan to 20 per cent., and from the United States to 6 per cent. of the total. Some idea of the possibilities of developing trade with China may be gained from the fact that the imports into that country only average 2s. 6d. per head per annum as compared with £1 per head in Japan. The German merchant in China is exhorted to devote more attention to the sale of German goods, and not to act, as at present, mainly as a dealer in British goods. Presistent advertising, both by posters and the distribution of samples, is recommended.

The article advocates the sale of articles of popular use, and suggests that goods should be sold in packets containing a selection of small articles used together; for example, a packet might be made up in accordance with Chinese taste containing a selection of needles, cotton, coloured wool and a few buttons. Such a packet should sell for about a penny and should be conspicuously marked with the maker's name. Similarly patent medicines, with directions in Chinese, might find a market. In all cases, however, the small purchasing power of the individual Chinaman must be borne in mind.

PHILIPPINE CEMENT MAKING

Work on the new $600,000 cement factory at Binangonan, Province of Laguna, is progressing rapidly and it will probably be in operation by December 15, 1914. It will be one of the largest manufacturing enterprises in the Philippines and will have an annual capacity of 150,000 barrels of cement. It will furnish employment for about 1,000 men, half of whom will be laborers, the remainder more or less skilled. A 5-mile aerial cableway will convey the limestone from the quarry at the rate of 27 miles an hour and deliver it in the storage room of the plant without rehandling. A large pier is being built out into Laguna de Bay, from which the cement will be loaded into lighters for shipment to Manila. A barrel factory will be operated on the premises to utilize native timber. The plant will be operated by electricity enerated from steam power.

Philippines from being acquired by some strong Power, within a few months after the American flag had been hauled down and the army transported back to America.

Yet, in deference to the peace proclivities of the Secretary of State and a firm desire on the part of President Wilson to stand loyally by his platform pledges responding to the wails of the Joneses and the little feeble hearted Americans allied with the anti-Imperialists; ignoring all the warnings which other American political leaders and statesmen have raised, the Democratic administration has persisted in its well meaning but mistaken policy of hastening the day of Filipino independence, and cutting the Islands adrift in the stormy seas of Far Eastern diplomacy, under the sole protection of a string of neutrality treaties with the other Powers.

How long would their independence have lasted if it had been conceded prior to August 1st. last of this year?

If the Democratic program could have been expeditiously carried out to suit the idea of Jones of Virginia and his friends, and the Islands had been cut adrift at ten o'clock on Wednesday morning or on any old day prior to August first, and safely established as a going republic under the proposed benevolent neutrality treaties, what flag would be flying over the Luneta in this month of October ?

There is little to be gained in idle speculation as to the nationality of the war ships which would have been the first to arrive in Manila Bay. Any one of the great Powers now at war with each other, could conveniently justify their seizure or occupation of the Islands at this time, especially Germany, who on one historical occasion manifested a strong desire for their occupation. If not Germany, then Great Britain, France or Japan would have felt justified in swooping down and seizing the Islands, to prevent them being used as a base by the German war ships. And as Belgium, Luxembourg and poor old China have relied for their safety and security on a piece of paper, and have not the physical force to protect their integrity and neutrality, so the feeble and peaceable Filipino Republic within a few weeks after the outbreak of war, would have been seized, and occupied by some strong Power acting under the peculiar code of international morality which justifies such an outrage as necessary for its self-preservation.

The Democratic leaders and their anti-Imperialistic allies at home together with the Filipino politicos and all the Immediate Independence party, should get down on their knees and give thanks to the Almighty that the whirlwind campaign to give immediate independence to the Islands has been providentially delayed, and that the protecting flag of America still floats over Corregidor. If it had been lowered any time last year as so many prominent Democrats ardently desired, what would be the position of the United States to-day? Could we have bowed to the will of our "peace at any price" Secretary of State and remained indifferent to the fate of our Filipino protegé after so many years of sacrifice and labor and still have preserved our national honor? Would not the violation of Philippine neutrality have compelled us to dispatch a portion of our fleet to enforce the provisions of the treaties, and enter into hostilities with any Power who had occupied the Islands?

America has escaped this for the present, with no thanks to the Joneses and the Filipino demagogues, but just so sure as the present Democratic policy is adhered to, just so sure will America some day be forced to follow Britain's lead in maintaining by force of arms, the honour of her treaty obligations in respect to the Philippines. If this lesson of the great war is learned by Americans and Filipinos, and taken to heart, the Philippine problem will soon be solved. The American flag is the only safe guarantee for a permanent and peaceful government in the Philippines. This in turn holds good just so long as America has the power to enforce respect, and the spirit to exert this power when occasion demands. If the flag is once hauled down, and the little Island Republic cut adrift, with only its waste paper guarantees for protection, it will only be a question of time when America would be compelled to return and defend its protegé from the rapacity of some other power. We commend these thoughts to those editors of the Filipino and Katipunan Press who for years have carried on a seditious campaign under the noses of the good natured American authorities in Manila, and who have persisted in casting discredit on the work of their benefactors. Instead of the usual beauty and other contests for increasing circulation, let the following question sink deep in the minds of your readers in the form of a guessing contest. What flag would now be flying over the Island if independence had been secured two years ago, last year, or any time prior to August 1st? It would be curious and enlightening for the Americans to know just what the popular opinion of the Filipinos is as regards this interesting subject. We commend it also to the Joneses and the Democratic leaders in Washington. Ponder over it, and the more you ponder, the more will it be brought home, that to abandon the Philippines with only the safeguard of a worthless paper neutrality is simply to invite, well not to be explicit, let us say Patagonia or some other country of equal importance, to step in and undertake the responsibility which America shirked.

JAPAN AND THE SHANTUNG RAILWAY

The railway built by a German Company between Tsingtau and Tsinanfu, the capital of the province of Shantung, has been the bone of much contention between the Japanese and Chinese during the past month, and in the future is likely largely to figure in discussions relative to a settlement of the question of the eventual fate of the leased territory of Kiaochow. The investment of Tsingtau by the Japanese and British troops led naturally to a desire on the part of the Japanese to control such a vital means of communication with the capital of the province as was afforded by this railway; and the fact that it was the enemy's property and had been used by the enemy to transport munitions of war and men to the fortress gave them a certain amount of justification for over-riding the objections of the Chinese against occupation. China claimed from the outset that the railway was not German property under the domination of the State. She argued that it was the property of a private company in which Chinese were shareholders, and, therefore, could not be considered a prize of war, but her arguments were in vain. The Japanese had determined to occupy the line as a military necessity, and when protests began to rain upon her defended her action on the following grounds—which were set down in a Note from the Japanese Legation to the Chinese Government.

"The Shantung Railway concession was based on the concession granted to the German Government in the Kiaochow Convention of 1898. It is entirely and purely a German Company, possessing the nature of public property under direct control of the German Government, and is in reality a part of the Leased Territory, being an extension of it. According to the Company's Articles of Association and the Charter of the German Government under which it is worked, it is proved that it is a German Company. The above facts are indisputable. In view of the manner in which the railway is working it is impossible for it to be divided up, and the fact that a section of the line running to the west of Weihsien lies within neutral territory, cannot alter the original status of the railway, which still remains German. The Japanese Imperial Government having in view the complete demolition of the enemy's base at Tsingtau, in pursuance of the declaration of war against Germany, is quite justified in taking possession of the railway as it constitutes an indivisable part of the Leased Territory of Kiaochow. This can be accomplished without the matter being referred to the Chinese Government, but to avoid any misunderstanding and to avoid any chance of conflict with the local authorities, the Imperial Japanese Government has acquainted the Chinese Government of her intentions, and requests that China make such arrangements as will allow this to be done without further delay."

In explaining her views regarding the railway Japan pointed out that "The Shantung Railway cannot be regarded as neutral, and Japan's action in taking possession of it does not amount to a violation of China's neutrality. The proclamation of the Chinese Government defining the war zone does not in any way

and Li Hung-chang, with the co-operation of General Gordon, whose services were lent to the Chinese by the British Government, and on the opening of the Yangtze region as a result of the Treaty of Tientsin, it became apparent that the whole country, lately the most prosperous portion of the Chinese Empire, had been to a large extent depopulated. Reliable authorities have calculated the loss of life in China owing to the Taiping and the Mohammedan Rebellions at approximately 100,000,000—c.f. Putnam Weale in "Conflict of Colour."

No better instance of the extraordinary recuperative powers of the Chinese nation, and of the productiveness of the Yangtze region, can be adduced than the fact that in spite of this wholesale slaughter, the ruined cities were soon rebuilt, the countryside which had reverted to a jungle interspersed with ruined villages, was soon repopulated and cultivated, and during the forty years of peace which elapsed between 1860 and 1900, the population of the Yangtze area recovered to a point higher than it had ever attained to in Chinese history. Trade at all Yangtze ports showed a rising curve during all these years, but first and foremost the trade of Hankow, as attested by the returns of the Maritime Customs Revenue, increased out of all proportion to all others, owing to the exceptional situation of the port, which has been described as the Chicago of China. In the "China Year Book," 1913, the estimated population of Hankow, exclusive of the sister cities of Hanyang and Wuchang, is given as 826,000, while that of the province of Hupeh, of which Wuchang, with its sister cities of Hankow and Hanyang, is the capital, is given as 34,000,000 (Customs estimate, 1910, 34,000,000; Chinese official census, 1885, 33,600,000).

Thus we see Hankow as the trading portion of a group of three cities with a total population of something over 1,000,000, is situated in the strategic centre for trade purposes of the principal provinces of China, namely, Hupeh, Hunan, Honan, Szechuan, and Shensi, each of these provinces being equal in area and population to a European state of the first order. The aggregate population of these five provinces is not less than 158,000,000, or about the same as the combined population of Germany, France and the British Islands, with Belgium and Holland thrown in. Many of the provinces of China contribute to Hankow's import and export trade, and again a large portion of the trade contributed by the millions of inhabitants of Central Asia finds its outlet to the sea at Hankow, while their requirements are imported through the same avenue.

The Bridge Over The Yangtze.

In this suggested structure provision will be made for a roadway thirty feet wide, two six-feet wide cantilever pathways, and a single line of railway.

The type of bridge at present suggested is a constant level floating bridge some 3,750 feet long, provided with twin opening spans electrically operated, giving a clear waterway of not less than 200 feet for the passage of steamers plying between Hankow and Ichang, which are much smaller craft than those trading between Hankow and down-river ports.

It is considered that a structure of this particular type has many advantages in overcoming some of the difficulties in foundation works. The general idea embodied in this important structure was detailed in one of the competitive designs for a bridge over the Hooghly at Calcutta. The constant level floating bridge has a decided advantage over an ordinary floating bridge which would rise and fall according to the considerable variation of the level on the Yangtze. It is thought, however, that this extreme variation in water level may necessitate, for economical reasons, having moderate gradings from each bank of the river towards the centre of the bridge.

In order to maintain the bridge at constant levels the submerged pontoons carrying the superstructure will be anchored down at and below the low water level of the river by means of tension rods, which will, in turn, be attached to groups of cylinders sunk deeply into the bed of the river. Consequently there is always an upward pressure exerted by the pontoons, and the stress in the above-mentioned tension members never becomes zero and is only reduced by the full application of the external load which the bridge is designed to carry.

It is estimated that one group of steel cylinders forming a "foundation" to sustain the upward pull as a swing span would entail the use of some twenty cylinders not less than 16 feet in diameter, while the ordinary fixed span groups for the same purpose would each need twenty cylinders not less than 10 feet in diameter as a foundation. The submerged pontoons providing the floating power to carry the superstructure would be of considerable length and diameter, strongly framed internally and divided into numerous watertight compartments. Provision will be made to remove cylinders for repairs as necessity arises. Until the necessary investigations at the site are concluded it is impossible to indicate more than the present general intention of those responsible for carrying into actual effect this large and much needed bridge, which will certainly rank as an undertaking of the first magnitude, involving as it will considerable engineering difficulties.

CHINESE PREMIUM BONDS

An interesting experiment is being made in China in the direction of sanctioning the issue of premium bonds. Premium bonds differ from the ordinary bonds in that instead of carrying the market rate of interest, they pay a smaller rate but some of the holders win premiums ranging from a considerable amount. In other cases the bonds carry no interest at all, but a large number of premiums is given and bonds that are drawn without winning a Premium are redeemed at par. This appears to be the method adopted by the Hsin Hua Savings Bank which is to issue bonds by permission of the Chinese Government. Regulations governing the procedure for the sale of these bonds have been drawn up, and the following is a translation:—

Regulations for Offices

1.—The General Office shall be established in the building of the Hsin Hua Savings Bank in Peking and it shall be organised by the representatives of the Telegraph and Post Department or the Postal Accounts Department of the Ministry of Communications, the General Post Office, the Bank of China, the Bank of Communications and the representatives of this Bank.

2.—There shall be one provincial agent office in each province and it may be located either in the provincial capital or in a commercial port which shall be decided by the General Office. The Bank of China, the Bank of Communications and the Telegraph and Post Offices of the province shall elect the agent among themselves. After the election is made, the General Office shall issue an official letter of authority to the agent.

3.—The number of branch agent offices to be established shall be decided by the provincial office and the Bank of China or the Bank of Communications, or the Telegraph or the Post Office may become the agent. The Bank of China or the Bank of Communications shall have the privilege of becoming the agent at their option.

4.—The provincial agent office shall be under the control of the General Office and the branch agent offices shall be controlled by the provincial Office.

5.—The duty of the agent offices shall be as follows:—

(*a*) To proclaim the regulations.
(*b*) To persuade the people to buy the premium bonds.
(*c*) To take charge of the distribution of lottery bonus.
(*d*) To take charge of the repayment of the capital when due.
(*e*) To announce the winning lottery numbers.

6.—The agent offices shall do their best to give information on all matters to the inquirers.

7.—The agent offices shall pay without delay when bond holders ask for the payment of the lottery bonus or the capital invested. A commission of 5% may be charged for the lottery bonus above the 8th grade. No discount is allowed to be made on the lottery bonus below the 8th grade.

8.—The branch agent offices may cash at the provincial office the lottery bonus or the capital paid by them upon the presentation of the

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Kowloon-Canton Railway.—In presenting the Supply Bill, 1914, to the Hongkong Legislative Council the Governor said in reference to the Kowloon-Canton Railway:—The Estimate of Revenue and Expenditure for 1915 is as follows—Earnings $435,000 and working expenses $323,455, leaving a balance of $112,145 net profit. Compared with the estimate for the current year this shows an increase of $10,754. The experiment of running night trains has been tried during this year, but has not proved successful. The deficit to be made up from General Revenue is $458,510 as against $469,264 last year. The following are the principal items of increase:—"Repairs of Station Buildings, etc.," $2,920. An Assistant Locomotive Superintendent, $3,397. This is a new post, approved by the Secretary of State, which has been rendered necessary by the increase in the number of locomotives. Coal shows an increase of $18,800 due to the rise in price. Oil, tallow and other stores are estimated to cost $3,100 more than last year. This estimate is based on the actual expenditure of 1913 and the revised estimate for the current year. "Materials, maintenance and renewals of Locomotive Engines" is increased by $8,348 to provide for increased repairs next year, as it has been impossible to spare the engines during the current year for this purpose. Three new locomotives will be available next year, and the old ones will then have a thorough overhaul. Under "Repairs and renewals of coaching vehicles" the items wages, power and materials have been increased by $2,265, $1,238 and $2,740 respectively. A new printing machine at a cost of $3,900 has been provided for and a sum of $1,000 is provided for hire of 1st and 2nd class coaches from the Chinese Section for week-end traffic. The arrival of the new rolling stock will obviate this expenditure in future. A post of "Inspector of Station Accounts" has been created at a salary of $2,400. A sum of $2,500 has been entered for house allowances pending the erection of quarters for the European Subordinate Officers. It is proposed to build quarters next year, which will be occupied free of rent.

Hu-Hang-Yung Line.—Mr. M. Y. Chung, Managing Director of the Shanghai-Hangchow-Ningpo or Hu-Hang-Yung Railway announces the following appointments of Heads of Departments of the said Railway with effect from October 23, 1914, in conjunction with their respective co-ordinate appointments in the Shanghai-Nanking Railway service:—

Mr. A. C. Clear, M. Inst. C.E., as Engineer-in-Chief.
" H. Middleton as Chief Accountant.
" J. D. Read as Acting Traffic Manager.
" E. J. Dunstan, M.I.Mech.E., as Locomotive Superintendent.

Kaifeng-Hsuchowfu Line.—A correspondent wrote from Suichow on September 25:—Apropos of several comments seen from time to time as to whether the construction work on the Kaifeng-Hsuchowfu railroad was at a standstill, the following information may be of interest. I recently passed through Kueiteh and had a talk with M. Bernhard, in charge of the district. The engineers who had been withdrawn for the war were being replaced and work was progressing, he said. Asked as to what effect the recent rains would have on the work he said the Hsuchow end was affected as some twenty *li* of grading was under water. Going down the river to Shanghai recently I had a talk with a Belgian from Chengchow, who informed me that the steel for this section is now in Hankow. We may not be able to use the road this year as was formerly reported, but, as M. Bernhard remarked, contracts must be met and they apparently call for an early completion of the work.

Swatow-Chaochowfu Railway.—Passenger receipts for 1913 are reported to have increased about 20 per cent. over 1912, but freight receipts continued to be insignificant. There were no improvements to the line nor any additions made to the rolling stock. Reports have been current that the line is to be extended, but not during 1914.

Shanghai-Nanking Railway.—The following figures of traffic returns (approximately) for the week ended September 19, are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	48,806	8,798	57,604
1913....	47,991	9,046	57,037
Increase.	815	—	567
Decrease	—	248	—

For 12 weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	513,500	124,360	637,860
1913....	436,070	88,456	524,526
Increase.	77,430	35,904	113,334
Decrease	—	—	—

Week ended September 26.

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	42,298	8,277	50,575
1913....	55,257	10,838	66,095
Increase.	—	—	—
Decrease	12,959	2,561	15,520

For 13 weeks.

Year.	Passengers.	Goods & Sundries.	Total.
	$	$	$
1914....	555,798	132,637	688,435
1913....	491,327	99,294	590,621
Increase.	64,471	33,343	97,814
Decrease	—	—	—

Week ended October 3

Year.	Passengers.	Goods & Sundries	Total for the week.
	$	$	$
1914....	51,242	9,248	60,490
1913....	55,911	9,132	65,043
Increase.	—	—	—
Decrease	4,669	116	4,553

For 14 weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	607,040	141,885	748,925
1913....	547,238	108,426	655,664
Increase.	59,802	33,459	93,261
Decrease	—	—	—

Week ended October 10

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	51,414	9,562	60,976
1913....	58,639	10,798	69,437
Increase.	—	—	—
Decrease	7,225	1,236	8,461

For 15 weeks.

Year.	Passengers.	Goods & Sundries	Total for the week.
	$	$	$
1914....	658,454	151,447	809,901
1913....	605,877	119,224	725,101
Increase.	52,577	32,223	84,800
Decrease	—	—	—

Light Railways Chartered:—Charters have been granted by the Imperial Japanese Railway Board to the Johan Light Railway Company for the laying of a steam light railway with a length of 7.66 miles between Horiye and Matsushima, Itano-gun, Tokushima prefecture, with a capital of 350,000 yen, and to the Oita Light Railway Company for the construction of a steam light railway with a length of 12.20 miles, which will cost 1,600,000 yen, between Sasaguri and Iidzuka, Oita prefecture.

Charters have also been granted for four light railways, as follows: Katori Railway Co. 7-mile line, Omigawa to Saware, cost $165,000; Hokuso Railway Co., 20-mile line, Kinoshita to Urayasu, capital $500,000; Tobim Light Railway Co., 11-mile line, Imbe to Toyomura, cost $190,000; Ushimado Light Railway Co., 8-mile line, from terminus of last-named railway to Ushimado, cost $185,000.

South Manchuria Railway.—The first locomotive of standard gauge to be manufactured by the Japanese has been turned out by the South Manchuria Railway Workshops at Shahokou. The Workshops adopted the superior points in locomotives of English and American manufacture. The locomotive is fitted up with the superheat steam appliances of the most up-to-date pattern, by which means a saving of coal by about 20 per cent. can be attained. The work of construction was taken in hand last February and the first standard locomotive was finished on September 21. Recently a trial traction run was made at Dairen with a train of goods cars. The engine belongs to what is technically known as the Consolidation type, and has larger dimensions by 20 per cent. than the largest of its class in the Company's possession.

Five more of the same type are now in course of construction and will be completed by next February. The whole cost for one locomotive is said to be less than Y40,000 which sum is several thousand yen cheaper than what will be required for one of foreign make.

The Workshops have also taken in hand six locomotives ordered by the Chosen Railway Administration. They are to be built on a special design befitting them for service over the Seoul-Wonsan line which, in its major part, has a gradient of 1/40.

New Railway Station.—Plans are being made for new station buildings for the Siamese Southern Railway at Bangkok Noi. This is to provide for the increased traffic

THE STATUS OF THE SHANTUNG RAILWAY

The seizure of the German Shantung Railway as a spoil of war, and the intention to operate the line under Japanese management, raises the question as to the legality of such a procedure. The argument is advanced by Japanese witers, that as the line is German property operated under the provision of a lease granted to the Imperial German Government by China, it must be considered as belonging to the German Government, and therefore a legitimate object of confiscation.

The real points at issue are clearly defined by a study of the various contracts bearing on the Railway; first, the Kiaochou Convention, second, the Railway Concession granted by the Imperial German Government to the Shantung Railway Company, and third, the Regulations for the Construction and Operation of the railway agreed to by the Chinese Government. These three contracts are reprinted herewith in full.

The Kiaochou Convention and its railway concessions to Germany, define the latter's rights as follows:

I. The Chinese Government sanctions the construction by Germany of two lines of railway in Shantung. The first will run from Kiaochow and Tsinanfu to the boundary of Shantung province via Wei-hsien, Tsinchow, Pashan, Tsechuen, and Suiping. The second line will connect Kiaochow with Chinchow whence an extension will be constructed to Tsinan through Laiwu-hsien. The construction of this extension shall not be begun until the first part of the line, the main line, is completed, in order to give the Chinese an opportunity of connecting this line in the most advantageous manner with their own railway system. What places the line from Tsinanfu to the provincial boundary shall take in *en route* is to be determined hereafter.

II. In order to carry out the above-mentioned railway work a Chino-German Company shall be formed, with branches at whatever places may be necessary, and in this company both German and Chinese subjects shall be at liberty to invest money if they so choose, and appoint directors for the management of the undertaking.

III. All arrangements in connection with the works specified shall be determined by a future conference of German and Chinese representatives. The Chinese Government shall afford every facility and protection and extend every welcome to representatives of the German Railway Company operating in Chinese territory. Profits derived from the working of these railways shall be justly divided pro rata between the shareholders without regard to nationality. The object of constructing these lines is solely the development of commerce. In inaugurating a railway system in Shantung, Germany entertains no treacherous intention towards China, and undertakes not to unlawfully seize any land in the province.

IV. The Chinese Government shall allow German subjects to hold and develop mining property for a distance of thirty li from each side of these railways, and along the whole extent of the lines. The following places where mining operations may be carried on are particularly specified along the northern railway from Kiaochow to Tsinan, Weihsien, Pa-shan-hsien and various other points; and along the Southern Kiaochow-Tsinan-Chinchow line, Chinchow-fu, Laiwuhsien, etc. Chinese capital may be invested in these operations, and arrangements for carrying on the work shall hereafter be made by a joint conference of Chinese and German representatives. All German subjects engaged in such works in Chinese territory shall be properly protected and welcomed by the Chinese authorities, and all profits derived shall be fairly divided between Chinese and German shareholders according to the extent of the interest they hold in the undertakings. In trying to develop mining property in China, Germany is actuated by no treacherous motives against this country, but seeks alone to increase commerce and improve the relations between the two countries.

In addition to securing a 99 years' lease on the territory of Kiaochou, Germany acquired the right to construct a railway from within the leased territory to Tsinanfu. Her rights in the territory were clearly juridical, as the lease provided that Germany should pay for all land expropriated for special purposes. In the matter of the railway, Germany simply obtained a franchise from the Chinese Government, to be executed in due time by a private China-German Stock Company. In other words, the sovereign rights of China were delegated to Germany, to build this railway with private capital, under rules and regulations to be defined by the German Government.

The Kiaochou Convention was signed on March 6, 1898. A syndicate headed by the Deutsche-Asiatiche Bank was shortly afterwards organized in Berlin, to incorporate the Shantung Railway Company, and apply for the concession from the Imperial German Government. A study of the concession granted to this Company fails to reveal any indication of an allotment of official shares set aside, or that any capital was subscribed for by the German Government. On the face of it, the document is an ordinary commercial charter granted to a private Corporation for the construction and operation of a railway, under certain restrictions enforced by all Governments for the proper supervision of a public service corporation. The shares were for public subscription only, and facilities were offered so Chinese capital could participate. The company was organized with a capital of Marks. 54,000,000 divided into 54,000 shares of 1,000 marks each, which were not all paid up until 1904. Certain founders' share were set aside for the promoting syndicate headed by the Deutsche-Asiatische Bank. and in which the German Government does not appear, which shares have the right to an important participation in the profits. The distribution of profits is fixed under the articles of incorporation as follows:—

Five per cent of the profits are placed to a reserve fund, until this reaches a tenth of the capital (Marks. 5,400,000), another five per cent is set aside for special reserve, and then a sufficient sum to pay a dividend of five per cent on the share capital. If any surplus exists after providing for the above, and after deducting five per cent for the Board of Directors, the Government of Kiaochou is entitled to receive the following payments: If the dividends of the Company exceed 5 per cent of the paid up capital, the Government of Kiaochou receives five per cent of any surplus between 5 and 7 per cent; 10 per cent of any surplus over 7 to 8 per cent; 25 per cent of any surplus over 8 to 10 per cent; 33 ⅓ per cent of any surplus over 10 to 12 per cent and 50 per cent of any surplus over 12 per cent. In the distribution of the profits, two-thirds are set aside for the shareholders, and one-third to the holders of founders' shares.

The German Government holds no pecuniary interest in the company, except the right to a participation in the profits when they exceed a reasonable return. The Government subscribed no funds, held out no guarantee on principal or interest; the concession was not sold for a monetary consideration, no special tax was imposed, and the only consideration received for the concession was a tax on the profits when they exceeded a certain figure. Until the profits exceeded five per cent of the capital the Government derived no benefit, and as the line was operating several years before this stage was reached, the Government participation was therefore nil. In the matter of the concession the German authorities simply proceeded along lines recognized and followed by other Governments, who seek to derive a fair revenue for the State from the disposal of public service franchises. This participation in the extraordinary profits in lieu of corporation and income taxes, and special assessments and other tolls on business in no way implies a financial interest in the enterprise, or makes the Gevernment liable as a shareholder or partner. The only protection or guarantee extended to the Company to ensure a profitable return on its capital, was the implied monopoly of the field, and the promise that no other concession would be granted for a parallel line, and that the Company would have the right, if they requested it, to construct the other Shantung railways embraced in provisions of the Kiaochou Convention.

The German Government fully and wisely protected itself against a failure on the part of the Company to live up to its Agreement to construct and open the line by a certain date, by enforcing the penalty of taking over the work itself or handing it over to a third party. This protecting clause in various other forms is a feature of all standard Government contracts. If the Shantung Railway Company, was an official enterprise with state funds invested in it, the Government would not have drawn up such stiff specifications for the faithful execution of the work. As a party to the contract both ways, it could not have properly exercised its authority, if its other partners failed to live up to their part of the contract. As to the rules regulating tariffs and train service, this is a prerogative reserved by all Governments for the protection of the public and does not imply any special interest in the line. The Japanese contention that the Shantung

and mines in restoring Kiaochou to China. In that event, China's sovereign rights delegated to Germany in the Kiaochou lease, will be restored to her, and on her shoulders will rest the responsibility of solving the problem of the private shareholders. This would mean that China would be compelled to pay the £5,000,000 to the German shareholders to legally and peacefully enjoy the control and profits of the railway and mines. And from where is China to raise this money?

The question naturally arises, is the property worth £5,000,000? Deducting the value of the mines and the uncompleted steel works, and appraising the railway at Marks 82,687,500 or £4,134,375, the operating results under efficient European management, clearly indicate that the property is well worth this sum, and more. Under the monopoly accorded it by the terms of the Kiaochou Convention and its Charter from the German Government, there is little doubt that in a few years, the dividends would have risen to ten per cent, and there is no reason why they should not be still further increased, if the record of the Peking-Mukden line is a fair criterion. The value of the line therefore hinges largely on the maintenance of the monopoly. Destroy that monopoly by nullifying the provisions of the Kiaochou Convention, and permit competition to enter the province, either by the Chefoo-Weihsien line, or the excavation of the Hsiao Ching-ho ship canal, and the value of the railway as a dividend producer is cut in half, and its sphere of real activity relegated to the 110 mile unprofitable zone between Tsingtau and Weihsien. The Chefoo-Weihsien line would not impair the value of the Tsingtau line, as the latter holds the power to enforce discriminating rates against the former on through traffic. The value of the main line, can only be seriously affected through the construction of the suggested ship canal from Tsinanfu to the sea. The right to carry out this improvement rests with the Chinese Government. Therefore the attitude of the Chinese Government will influence the ultimate value of the railway. If the Chinese determine that their own interests are paramount over those of Germany and Japan, and decide to construct the Hsiao Ching-ho canal, the value of the Shantung railway shares will decline to at least half their present value. The construction of the canal will make the line a useless luxury to either Germany or Japan in the future, as the shipping center will again shift from Tsingtau to its original base at Chefoo. There would then be no profit in Japan paying the price to the German shareholders, as the railway could not maintain the commercial prominence of Tsingtau against Chefoo and the cheaper all water route through the heart of the competitive district to the provincial capital at Tsinanfu. Japan could then reap no profit from a base at Tsingtau, but would be amply rewarded by the extension of her commerce from Dairen.

If Japan decided that the retention of the railway is too costly, and restores it to China in connection with the lease of Kiaochou, and China is compelled to assume the obligation of acting honorably with the German shareholders, her valuation of the property would be influenced by her attitude towards the suggested canal. The expenditure of £1,000,000 on the canal, would reduce the value of the railway as a revenue producer to at least one half its present value, or £2,000,000. It seems clear then that if Japan restores the line to China, with the obligation to indemnify the shareholders, China's interests would demand that she expend £1,000,000 on the canal, which would be repaid 100 per cent by the decreased cost of the railway. With this possibility in view, is it worth while for China to undertake the construction of the Canal at once? Japan, Great Britain and the other countries at war with Germany may devise their own plans for the ultimate disposition of Germany's interests in Shantung without consulting China or other Powers who enjoy equal privileges, but China herself holds the whip hand in Shantung, which nothing short of deliberate seizure of the Province by a foreign Power can wrest from her.

A little neutral advice on the neutralization of Shantung at this time, would undoubtedly awaken the Government at Peking to a realization of its strength in this matter, but it is almost hopeless to expect that China will be guided aright through this crisis in her history. No influence short of actual force, and the utter disregard of the rights of the weak, which Britain has sworn to protect, should stand between China and this avenue of restoring her influence in the sacred province of Shantung. Where there's a will there's a way, and China should exercise that will at once.

GEO. BRONSON REA.

EGG AND ALBUMEN INDUSTRY

The exportation of eggs from Tsingtau in 1910 was 1,821,183 dozens, against 955,409 dozens in 1909, the bulk going to Vladivostok. One factory engaged in the export of prepared dried eggs and the manufacture of egg cognac, egg noodles, and albumen also uses about 3,300 dozens a day.

While this industry has existed here for several years, the products being shipped to Germany, no effort was made until recently to secure trade in the United States. A sample shipment has gone forward under the requirements of the American pure-food law, and it is confidently expected that a thriving business will result. The egg supply is drawn from the southern part of Shantung, Chihli, and Honan Provinces, and with the latest German machinery a local firm has entered upon the business with hope of a substantial extension. The Columbia company, started in 1909, is a limited liability concern, whose export abroad in powder form exceeds 800,000 lbs. The nature of the machinery and the system employed in making the various products are held secret, and the only information obtainable has been in connection with the sample shipment mentioned.

Buying depots are established at Chowchow, Tsingchow, Weihsien, and other important places along the Shantung Railway line, and buyers are sent all over the province, purchasing eggs. For packing, empty cases of coal oil are used. Each of these fully packed will weigh about four hundred catties.

The price was 21 tiao per thousand in former days, but now it is raised as high as 27 tiao. As there is no chaff in the province owing to the absence of rice cultivation, wheat-straw or kaoliang stalks, beaten soft, are used in place of chaff in packing eggs.

The eggs arrive at the factory packed in old kerosene oil boxes. They are carefully examined by being held close to a strong electric light which shows the least defect. The fresh ones are washed and passed on to several Chinese boys who open them and separate the yolk from the white.

With the aid of a suction pump the yolk passes through a large pipe into a vacuum in the machine and is dried in 15 seconds. It is then passed on to a large receptacle into which the matter falls in the form of flakes which look clean, have a good color and a fresh odor. The flake is again passed through a machine and comes out in a powdered form ready for shipment. It is said that this product can be kept indefinitely if stored in a dry, cool place.

The whites of the eggs are put in small glass-bottom trays about a foot square and placed on shelves in a room having a temperature of 40° to 55° C. After thoroughly drying the material is broken up in small pieces and ready for export. These sheets are sometimes powdered or reduced to a crystal form resembling granulated sugar.

The factory is taxed to the limit of its capacity and it is the intention of the company to enlarge.

A market for eggshells has been recently established in Germany, where they are used as poultry feed.

To make 10 kilos (22 pounds) of dried yolks 1,500 eggs are required; to make 10 kilos of whole dried eggs 1,000 must be used, while 2½ kilos (5½ pounds) of albumen are made from the whites of 1,000 eggs.

The price of the whole dried egg is about $0.73 Mexican (31 cents United States currency) a pound, of albumen $1.03 Mexican (44 cents), of dried yolk about $0.53 Mexican (24 cents). Shipments are made in tin-lined cases holding 50 and 100 pounds.

Another German firm (Karl Elers) also opened a factory in 1911, the output for the first year amounting to over 300,000 lbs. The specialty of this factory is the dry product which is sold under the trade name of "Sinaqua." Other factories were projected by German firms.

railway is German Government property, because it constitutes an extension into Chinese territory of the Kiaochou lease, holds good then only as to the juridical rights exercised by the German Government in the regulation and supervision of a public carrier corporation. The physical property of the railway, land, road bed, rolling stock, stations, warehouses, terminals and wharves, are owned by the Shantung Eisenbahn Gesellschaft, a purely private share corporation whose rights to undisputed possession are incontrovertible. The rights of private property are recognized in civilized warfare. Japan may seize and operate the Shantung Railway as a military measure, and be well within her temporary rights. She may even confiscate the railway, but the rights of private property in international law stipulate that she should pay a reasonable price to the owners in return, and, in addition, an indemnity for the use of the line during the time the owners were forcibly withheld from legitimate enjoyment of their property.

If it is admitted that the German Government holds no shares in the Shantung Railway Company, but simply exercises its undoubted right to supervise and regulate its operations, and that the Company is a private one, it becomes evident that confiscation of the property by Japan, must be followed by some equitable and honorable compensation to the owners. Not only must Japan pay a fair price for the line, but also a fair indemnity or return for the use of the line until the final settlement is reached. A case in point occurs to us. When the Americans were operating against the Filipino insurgents in the Island of Luzon, it became necessary for the army to take possession of and operate the Manila Railway, owned at the time by a purely British Corporation. Up to the close of the insurrection, the British Company was forcibly deprived of the lawful enjoyment of the profits arising out of the operation of the line, and in consequence a heavy claim for damages was filed with the American Government. The seizure and occupation of the railway was rendered absolutely essential by the exigencies of the military situation, and there were other reasons which might have justified the American Government in refusing to entertain the claim. The failure to pay this claim at once was the cause of some friction, but it was eventually amicably adjudicated to mutual satisfaction. The precedent established is applicable to the Japanese seizure and operation of the private controlled German railway in Shantung. There may exist good Japanese reasons why an indemnity for the use and operation of the line should be refused to the German shareholders, as they are the enemy, but we can see no grounds for Japan to legally confiscate the property, without recompensing the owners for its loss. If Japan succeeds to the German Government rights in Shantung under the provisions of the Kiaochou Convention, she simply inherits the juridical rights to supervise and regulate the operations of the private German Company, in addition to the right to purchase the property at the expiration of any five year period under conditions fully and clearly set forth in the concession. The purchase price is determined by the payment of twenty-five times the amount of the average dividends paid during the last five years from its earnings. This then is the situation confronting Japan. If the rights of private property are respected, she must face the prospect of purchasing the railway from the shareholders, under the above conditions. The capital of the railway Company is Marks 54,000,000. For the last five years the following dividends were declared:—

1908	.0475	per cent.
1909	.06	„
1910	.065	„
1911	.06	„
1912	.075	„
	.3075	per cent.

an average of .06125 for the last five-years. Twenty five times this is 153.125 per cent. This means that the value of the railway property alone would amount to Marks. 82,687,509 (£4,134,375) to which must be added the value of the mines and the steel works, now owned by the railway company. The capital of the railway company was increased by Marks 6,000,000 to take over the mines, and then by an additional Marks, 10,000,000 to erect the steel works. Its capital is now Marks, 70,000,000 or 16,000,000 more than is represented by the railway property. If we add 16,000,000 Marks as a fair valuation for the mines and steel works, which as yet have paid no dividends, we have Marks 98,687,500 or roughly £5,000,000 as the actual market value of the combined properties, Japan would be called upon to pay the private shareholders for the confiscation of their property. It is idle for Japanese publicists to adhere to the fiction of the railway being Government property in view of these facts. The railway was one thing, and the mines another, both being distinct private commercial entities, though affiliated by an interlocking directorate, representing the larger banks behind both enterprises. The railway struggled through its early stages, and owed its prosperity in part to the traffic of the Mining Company. The mines did not pay, and the railway company purchased the shares of the mining shareholders, and assumed control. The German Government had absolutely nothing to do with this ordinary business transaction between two private and independent commercial organizations, whose rights over the control of their property, and the lawful enjoyment of the profits arising therefrom have been ignored and rejected by Japanese seizure of the property for military purposes.

It is to be presumed therefore, that in the event of the ultimate victory of the Allies over Germany, and a separate treaty being signed between Germany and Japan, by which the latter will succeed to the rights embraced within the provisions of the Kiaochou Convention, that Japan will be called upon to deal honorably with the private shareholders of the Shantung Railway Company by an impartial valuation of their property, by competent authorities, and payment in accordance with their decision. Otherwise, the whole fabric of the inviolability of private property under international law controlling warfare, will tumble to pieces, and with this foundation swept away, it will be extremely difficult to restore that confidence in the money markets essential for investment of capital in new foreign enterprises, Japan would be the first to suffer, as all confidence in her willingness to abide by established European usage, would be destroyed, and her future loans ostracised abroad. In the heat of conflict, and intense national antipathies aroused by the war, it is all very well to talk of confiscation and seizing the Shantung Railway as a spoil of war, on the supposition that it is part of the Kiaochou lease, but when the war is over and the shattered organization of international finance is restored to its normal working order, closer scrutiny will be given to those incidents which undermine and make impossible future confidence in foreign investments. If Japan, by right of might, should arbitrarily refuse to compensate the private shareholders and owners of the Shantung Railway Company, and insist on an absolute confiscation of their property as a spoil of war, there might be no power to restrain her from doing so, but she would pay the price nevertheless, by a loss of confidence which would find expression in the money markets of the world. It would appear then that the utterances of a section of the Japanese Prese, can not accurately reflect the real sentiment of the Government, who must be giving serious thought to the problem involved by the seizure of the railway and mines, and of finding an honorable and equitable solution.

If Japan determines to confiscate the property, any international court of arbitration would undoubtedly decide in favor of adequate compensation to the private shareholders. If we accept this, it means that under the terms of the Charter of the Railway Company providing for the acquisition of the property by the Government, Japan would be called upon to pay the shareholders the sum of £5,000,000.

Where will Japan raise this sum immediately after the war? If she is unable to buy out the shareholders, and insists on operating the line, the only just course to pursue, would be to act as the trustee for the shareholders, and turn over to them the annual profits, until such time as she can indemnify them outright. This in turn would call for the admission of German represention in the Directorate and accounting department, to protect the interests of the shareholders.

If Japan accepts this principle in guiding her future attitude towards the Shantung Railway and mines, and does not feel justified in paying the sum of £5,000,000 for the unrestricted control of the property, she may decide to include the railway

THE SHANTUNG RAILWAY

The original capital of the Company was 54,000,000 Marks, but when the Company took over the rights and property of the Shantung Mining Company on January 1, 1913, the capital was increased to 60,000,000 Marks, divided into 60,000 shares of 100 Marks each.

The grading for the road-bed began on September 23, 1899, at Tsingtau and Kiaochou, when His Royal Highness Prince Henry of Prussia turned the first sod. The engineers planned a single track, standard gauge line, and work was carried on in both directions, east and west, some 25,000 laborers being employed. Progress was fairly rapid, the grading of the road-bed presenting few engineering difficulties. For the greater part of its length the line runs through flat country, skirting the foot of the mountains in middle Shantung, and dynamite was only employed in a few places in the German leased territory and in a few cuttings on the western section.

Starting from Tsingtau station, which is eight metres above the sea, the railway crosses several low chains of hills between the larger rivers, and on reaching the water-shed of the Yun-ho, attains a height of eighty-eight metres, gradually ascending as far as the city of Tsing Chow-fu. Wide streams such as the Pai Cha-ho, Schykia-ho, and Taku-ho, are crossed before Kiaochou, at the head of the bay, 74 kilometres from Tsingtau, is reached, and thence to Changling, 128 kilometres from Tsingtau, the line passes through a fertile plain crossing the two rivers, Mischui-ho and Kiau-ho. West of Changling the line reaches the hilly country and passes the ranges in long winding curves to Wei-hsien, 183 kilometres from Tsingtau. Many rivers rise in this part of the country, two of them being spanned by bridges of nearly 300 metres in length each.

Having reached Tsing Chow-fu the line descends to a height of 40 metres near Chow-tsun, and about 20 kilometres west of that city a chain of mountains running from south to north is crossed, the height reached at Wang-tsun being 158.73 metres above sea level. From this point the line gradually descends to Tsinanfu, where the altitude is but 34.80 metres above sea level.

Branch Lines.—A branch line, 40 kilometres in length, beginning at Changtien, which is 47.17 metres above sea level, runs in a southerly direction up the Poshan valley, following the course of the Hsiau-fu-ho. The town of Tzechwan, the centre of the coal mines of the Company, is passed en route and the terminal station is at Poshan, 179.40 metres above the sea.

A branch line seven kilometres in length from Setchwan also connects with the Hungchan coal mines; another branch four kilometres in length joins the main line at Fangtze with the coal mines, while another branch at Tsinanfu, eight kilometres in length, gives connection with the Yellow River. In a short time a new branch seven kilometres long will be open to the iron mines at Chinlin-chen, where work has just been begun.

Length of Line and Gradients.—The total length of the main line is 400 kilometres, or 395,373.75 metres, of which there is a level grade of 41.62% or 164,452.68 metres. The ascending grade from east to west is 29.01%, the descending grade being 29.37%. The straight track totals 299,323.42 metres, or 75.71%, the curves absorbing 24.29%.

The Poshan branch line has a length of 39,200 metres, the level grade being 30.42%, and the ascending grade 69.58%. The straight track totals 27,416.04 metres, or 69.94%, the curves totalling 30.06%.

The steepest grade on the main line is one in 150, and on the Poshan line one in 100. The sharpest curve has a radius of 300 metres.

Road-bed.—The road bed is five metres wide, the slope being one in 1.5. In flat country, where floods occur, the slope is one in 2. Excavations are likewise five metres at the bottom. Ditches wide enough to carry the water which runs from the sides of excavations have been made and lined with cement plaster.

Earthwork.—As far as possible excavations of any considerable depth were avoided owing to the great friability of the soil. No tunnels were necessary.

Embankments are protected against the ravages of heavy rains and floods by heavy stone reinforcements of the base, in addition to which the sides have been protected with sod, and trees such as willows, acacias and alders.

Ballast.—The stone ballast is 4.50 metres wide, and consists either of broken stones (granite or black limestone) or of pebbles, and is at least 35 centimetres thick.

Bridges and Culverts.—The total number of bridges and culverts along the line is 1,330. Of these 1,150 are iron bridges, and 280 arch stone culverts. The latter vary in length, the maximum being six metres. The total length of all such culverts on the line is 640 metres.

The spans of the iron bridges vary from one metre to 46 metres, and their total length is 7,700 metres. The longest bridge is over the Tse-ho, 258 kilometres from Tsingtao, the length being 470 metres. The number and dimensions of the bridges more than 50 metres long are as follows:—50 metres to 100 metres, seventeen; 100 metres to 200 metres, three; 200 metres to 300 metres, five; 470 metres, one.

Masonry.—The total mason work on bridges and culverts amounts to 210,000 cubic metres. The foundations of most of the large bridges are laid upon iron piles 12 to 14 metres long. In a few cases the foundations rest upon caissons.

Rails and Ties.—The normal length of the iron rails is 10 metres, and the weight 300 kg. each. The ties are of steel, weighing 50 kg. each. The material was all bought in Germany. The rails are ten centimetres wide at their base, 5.7 centimetres at their top, and are 12.50 centimetres high. The ties are 2.40 metres long and 8 centimetres high.

Stations.—There are 55 stations for all kinds of traffic on the main line, and four on the branch line to Poshan. Besides these there are five stations at the end of short branches for receiving cargo only.

The majority of the stations have goods sheds. Some important stations have two, the total number of all sizes being 32. European station masters are in charge at Tsingtau, Kaumi, Fangtze, Changtien, and Tsinanfu West.

Round Houses.—There are 16 round houses, with capacities varying from 4 to 12 locomotives. The round houses at Tsingtau, Kaumi, Fangtze, Changtien, and Tsinanfu are under European control.

Turn-tables.—There are eight turn-tables with an inside diameter of 17.50 metres each.

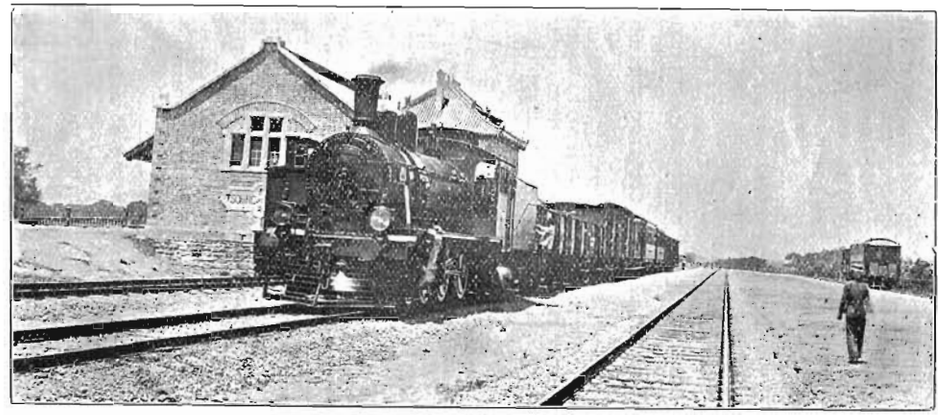
Tank Houses.—There are 20 tank houses with water tanks of from 40 to 80 cubic metres each.

Platform Scales.—There are twelve platform scales of 55 tons capacity each.

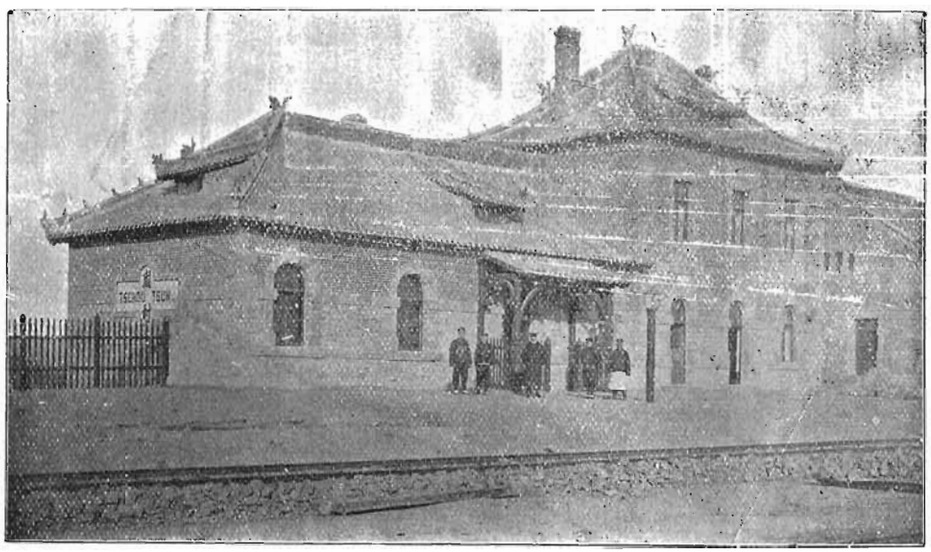
Works Shops.—Large work shops and magazines are situated at Syfang, near Tsingtau, and are fitted with the best and most modern machines, operated by electricity. They are capable of effecting all necessary repairs, and most of the outfitting work can be quickly and efficiently done. The shops are under the direction of an engineer of the Imperial German Railways, who has under his control 16 Europeans and about 700 Chinese apprentices. The stations which are under the supervision of Europeans are able to effect small repairs to locomotives and cars. They engage in this work about 100 apprentices and laborers.

Opening of the Line.—The first section of 74 kilometres to Kiaochou was opened for traffic on April 8, 1901, and further sections were put into operation during the same year. On June 1, 1902, the whole of the first half of the line, as far as Weihsien, was opened for freight and passenger traffic, and on June 1, 1904, the whole line, including the Poshan branch, was opened.

Terminal at Tsingtau.



Ching-chow Fu Station.



Tschou-tsun Station.

Tscheng-yang Station.

Likotschuang Station.

SHANTUNG RAILWAY—TYPES OF STATIONS.

Cost of Construction.—The railway was five years in construction and the entire cost of construction and equipment was 52,901,266 Marks.

Following are the details:—

Land	£ 89,700
Earthwork	148,000
Level crossing and fencings	2,700
Bridges and culverts	728,000
Permanent way	759,000
Signals, blockhouses, etc.	13,200
Stations	106,000
Repairing-shops, etc.	85,000
Materials (coals, etc.)	310,000
Administrative expenses	203,000
Interest on capital, etc.	200,000
Total	£2,644,600

or, including interest on capital, about £9,200 per mile.

The longitudinal section of the road shows that the main line is made up of forty-two per cent. level, twenty-nine per cent. rise, and twenty-nine per cent. fall, with a maximum grade of six per cent. The permanent way has been constructed to sustain ordinary traffic at a speed not exceeding 37.5 miles per hour.

The survey covered in area a strip of land varying in breadth between 500 and 2,000 yards, and cost about £36 per mile, being completed at the rate of ten miles per month. The land was expropriated in accordance with Chinese law, 1*s.* 1*d.* being paid per square yard, with a surcharge of eight per cent. for land in crop and near the townships. The earthwork was sublet in contracts of six miles in length, and was paid for at schedule prices, 1*s.* 4*d.* per cubic yard for ordinary earthwork, and 10*d.* per cubic yard for rock. All bridges and culverts were standardized, as well as the wooden and steel scaffoldings used for erection.

REPORT FOR 1912

The following is the report of the Board of Directors of the Shantung Railway Company for 1912:—

The year 1912 closed with a profit of $3,063,909.13 (2,410,583.65)* and a dividend of 7½ (6%) for the capital and M. 12.50 (M. 5.00) for each special share. The receipts amounted to $4,239,664.01 (3,511,105.60) and the expenditure to $1,175,754.88 ($1,100,521.95). In spite of the decrease in the shipments of construction material for the Tientsin-Pukow Railway both the passenger and the freight traffic show a remarkable increase. The high rate of the Chinese dollar—mean rate for the year M. 210.47, (185.99)—benefited the financial result of the company to a great extent.

There were no remarkable accidents, neither were any bridges or culverts destroyed during the rainy season.

The increase in traffic and the connection with the Tientsin-Pukow Railway necessitated the following improvements and building:

At Hamatun and at Ershilipu one small freight-shed; in Tsinanfu West the enlargement of the station in order to facilitate the passenger and freight traffic from and to the Tientsin-Pukow Railway; in Tsingtau a dwelling house for Chinese station and train personnel, and a car shed for the new 1st Class dining cars; a depôt at Tsingtau Grosser Hafen; at Syfang enlargement of the shops (not finished), a shed for the main storehouse, and an office building for the administration of supplies with dwelling house for the personnel; a lumber-shed for the central repair, etc., shops at Kaumi; a lodging-house for training personnel in Fangtze and Weihsien; a lodging house for train-personnel in Fangtze; a dwelling house for Chinese personnel at Tchangtien and Tsinanfu West.

The condition of the tree plantations and shrubberies is satisfactory. Mostly acacia and willow were planted. The tree-nurseries of the Railway furnished the young trees.

The agreement with the Tientsin-Pukow Railway with regard to transfer of cars, which proved satisfactory, was in December, 1912, after the completion of the Hoangho-bridge, extended to all stations of the Tientsin-Pukow Railway. During the year 1912 the following cars were transferred:

From the Shantung Railway to the Tientsin-Pukow Railway, 3,959 (5,026) cars.

From the Tientsin-Pukow Railway to the Shantung Railway, 1,895 (492) cars.

The decrease of cars from the Shantung Railway to the Tientsin-Pukow Railway is due to the fact that the construction work of the Tientsin-Pukow Railway is nearing its completion and the shipment of supplies is decreasing accordingly.

Rolling Stock:—

Locomotives: 41 (41) viz:

23 ten wheeled, 6 coupled, 2 cyl. simple passenger engines.
4 ten wheeled, 4 coupled tank passenger engines.
7 eight wheeled, 6 coupled tank-freight-train-engines.
3 eight wheeled, 8 coupled, 2 cyl. simple freight-train-engines.
4 eight wheeled, 6 coupled shunting engines.
Total of 0.094 engine per kilometer of road.

Passenger and Baggage cars: 110 (110) viz:

15 Passenger cars, 1st and 2nd Class
5 „ 2nd „
8 „ 2nd and 3rd „
3 Dining cars
3 Kitchen cars
23 Baggage cars
10 „ and mail cars.
1 Office car
1 Saloon car
Total of 1.253 cars per kilometer of road.

Freight and service cars: 1,051 (1,013):

283 Covered wagons
557 Coal (open) wagons
75 Coke-wagons
5 2-story cattle wagons
10 Wagons for transp. of lime with lid
104 Flat wagons
3 Trav.-cranes
2 Tool wagons
1 Trav.-scales
Total of 2.419 cars per kilometer of road.

On the average there were 41 locomotives and 1,121.75 cars on hand during the year.

One express passenger train travelled daily between Tsingtau and Tsinanfu, also 16 mixed trains and about 9 supply, etc., trains.

The total number of trains amounted to 12,530 (10,644) and the total number of kilometers travelled to 1,439,760 (1,322,805).

The number of kilometers travelled is distributed as follows:

	No. of trains.	Kilometer.
Passenger	732 (688)	288,408 (269,490)
Special Passenger Trains	20 (9)	2,758 (1,646)
Mixed Trains	5,856 (5,836)	653,680 (646,516)
Trains carrying R. R. supplies	3,204 (2,049)	465,506 (377,408)
Construction Trains	2,718 (2,062)	29,408 (27,745)

The rolling stock obtained the following results:

(a). Locomotives: 1,623,144 (1,432,374) Locomotive Kilometers distributed as follow:

	Loc. Kil.
in Passenger trains:	288,408 (269,490) „
„ Special P. „	2,758 (1,646) „
„ Mixed „	653,680 (646,516) „
„ Supply „	465,506 (377,408) „
„ Construction „	29,408 (27,745) „
„ Extra trains	153,019 (83,506) „
Empty	30,365 (26,063) „

in addition to the above
in Switching 42,606 (35,794) hours at 10 L. Km=426,060 (357,940)
in Miscellaneous 20,370 (19,534) hours at 5 L. Km.=101,850 (97,670)

(b). Wagons: 61,807,064 (50,486,864) Wagon-Axle-kilometers, i.e.,

	Axle-Kilo.
Passenger cars	13,552,466 (10,315,180) „
Baggage & Mail cars	3,446,100 (3,206,848) „
Freight cars	44,808,498 (36,064,836) „
Empty	15,433,076 (12,683,180) „

Average strength of train:
42.93 (38.17) axles.
Average of traffic per week:
23,655 (17,482) Passengers 16,385 (14,084) Freight tons
Greatest traffic in one week:
35,469 (25,283) Passengers 32,267 (24,277) tons of freight
Total of traffic
1,230,043 (909,065) Passengers 852,001 (717,189) tons of freight.
RECEIPTS: Total $4,239,664.01 (3,511,105.60) distributed as follows:—
Passenger traffic: $970,246.52=22.89% (714,204.55=20.34%)
Freight traffic: $3,229,960.37=76.18% (2,741,807.86=78.09%)
Miscellaneous $39,448.12=0.93% (55,093.19=1.57%)
Average receipts per km. $9,758.92 (8,081.91)
Compared with the preceding year the receipts increased 20.75% (—5.88%) as follows:—
Passenger traffic+35.85% (+9.04)
Freight traffic+17.80% (—7.63)
Miscellaneous—28.40% (—48.51)
EXPENDITURE: Total $1,175,754.88 (1,100,521.95)
=per kilometer $2,706.37 (2,533.20)
compared with preceding year+6.84% (+10.08)
The proportion of the receipts to the expenditure 100:27.73 (31.34)
The following items concerning the balance have to be considered:—

Supplies on hand:

Main Storehouse	M. 884,393.36
Telegraph „	36,411.72
Coal & Oil „	79,635.48
Printing „	18,291.79
Fixtures, etc.,	9,500.91
Total	M. 1,028,233.26

* The figures in parenthesis are the correspondiug figures for the preceding year.

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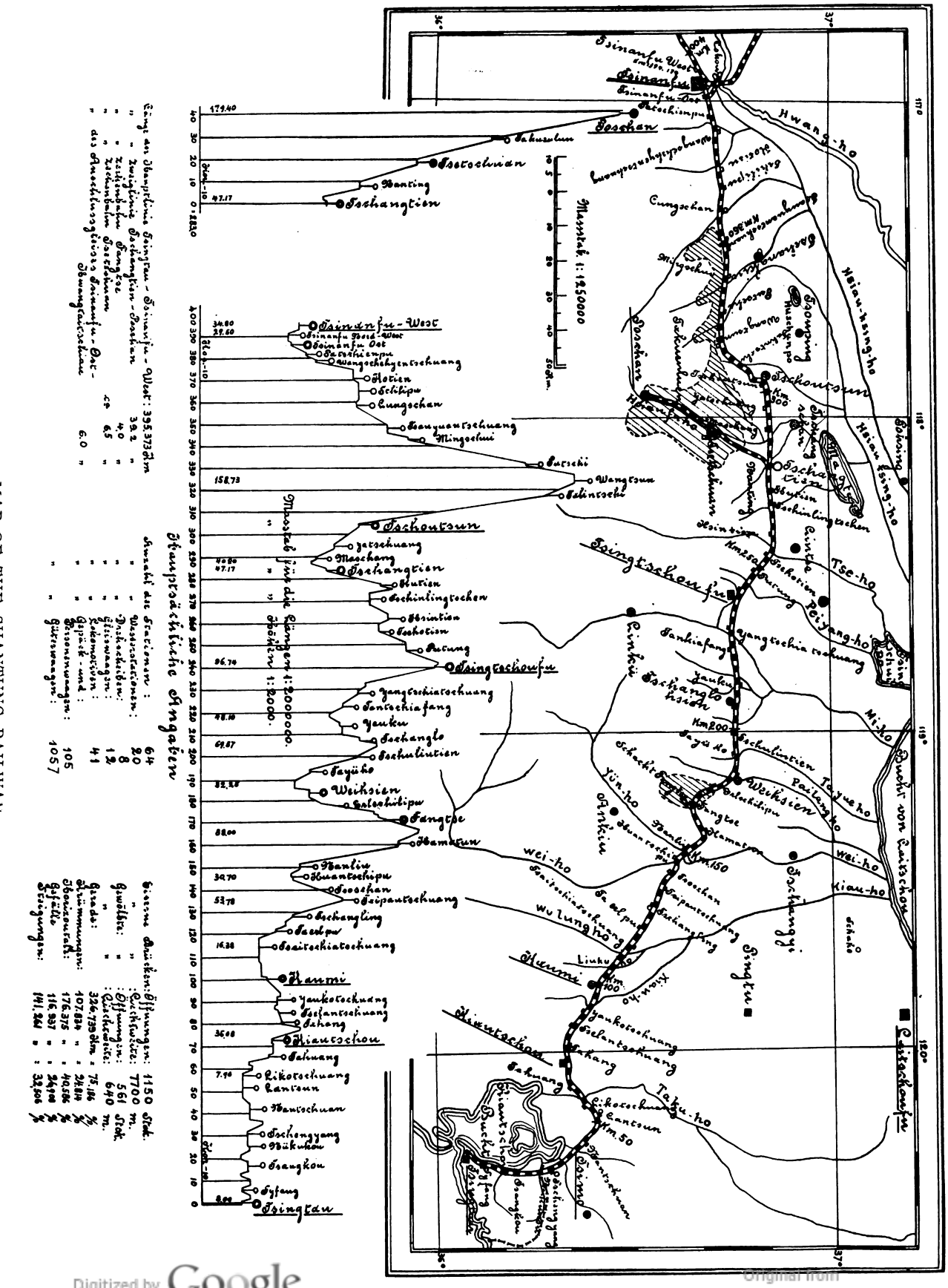

MAP OF THE SHANTUNG RAILWAY

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Stocks and Bonds on hand: M. 520,000.00—3½% Bayerische Eisenbahnanleihe (Bavarian R. R. Loan) M. 300,000.00 3½% Deutsche Reichsanleihe (German Loan) remained unchanged. On account of the low rate of exchange of the above bonds a loss of M. 26,540.00 during 1912 occurred. All the above stocks and bonds were sold during the current year 1913.

Outstanding Funds: Advances made to Shantung Mining Co. M. 1,000,000.00.

Repair and Improvement Fund stands with M. 3,397,289.11 against M. 499,583.95 of the preceding year. The additions were:—

For use of track and material	M. 405,000.00
Interest	115,908.21
Sale of old material	1,037.50
	521,945.71
The deductions were: Expenditure for track and supplies	22,361.76
	499,583.95

To a newly formed "Disposition and Valuta" Fund M. 800,000 were transmitted.

PROFIT AND LOSS

Including M. 304,791.48, balance brought forward from 1911, and after deduction of:

M. 405,000.00—Addition to Repair and Improvement Fund
M. 800,000.00—"Disposition and Valuta" Fund
M. 26,540.00—Loss by rate of exchange.

The *net receipts* for 1912 amount to M. 5,596,296.61.

It was proposed to distribute the profit as follows:

To the Reserve Fund	M. 264,575.25
„ „ Special Reserve Fund	264,575.25
5% Dividend = M. 50 per share	2,700,000.00
Compensation of Board of Directors	103,117.73
Taxes to the Government	116,235.46
Extra dividend of 2½ = M. 25 per share	1,350,000.00
To special shares M. 12.50 per share	675,000.00
Balance to be carried forward	122,792.92
	M. 5,596,296.61

The traffic in the last few months of the new year has been satisfactory, and it is believed that the decreased receipts due to the double Chinese New Year will be made good. It was suggested by persons interested in both the Railway and Mining operations, to acquire the entire Mining Company to become part of the Company. As the existence and extension of the Mining Company is of vital interest to the Railway as being a source of considerable shipments over the line, a resolution was adopted at a General Meeting of the Company on February 12, 1913, to take over the entire Shantung Mining Co. against a compensation of M. 5,400,000.00, to be covered by an issue of new shares equally entitled to dividends from January 1, 1913, excluding privileged rights of shareholders as to sale of products. The registration of the resolutions in the Register of Commerce at Tsingtau took place on April 4, 1913, after the consent of the Imperial Chancellor as to the transfer of the Shantung Mining Co. to the Shantung Railway Co. had been obtained. The Shantung Mining Co. (to be dissolved) announced in accordance with Par. 50, Civil Law, the dissolving of the Shantung Mining Co. as such and asked its creditors by circular to send in their claims.

According to reports on hand the net receipts of the Shantung Mining Co. from April 1 to December 31, 1912, amounted to M. 660,000.00 and for the first quarter of the current year to M. 240,000.00. According to these figures and the expectations of the General Meeting, the results to be obtained from the Shantung Mining Co. will equal those of the Shantung Railway Co. and yield about an even distribution of dividends.

Character of Traffic

LIST OF GOODS SHIPPED

	1912	1911	1906	1905
Coal and Coke	471,808	418,536	207,876	158,115
Piece Goods	57,477	47,505	8,952	25,353
Metal, Machinery	13,625	42,962	8,912	9,873
Beans	48,777	35,575	36,572	38,409
Coal oil	34,516	31,626	10,331	2,936
Wood and Woodware	20,167	20,412	15,153	14,515
Oil	17,182	20,973	5,005	4,127
Cotton, raw and fabrics	4,458	9,721	25,648	9,899
Paper	8,545	7,961	7,134	1,685
Earthenware	8,740	7,796	5,209	3,847
Straw matting, etc.	10,385	6,166	3,807	3,993
Vegetables	45,911	30,635	2,340	2,103
Lime	5,866	2,868	3,358	3,285
Sugar	7,566	2,738	4,388	—
Grain	6,419	2,213	1,477	995
Matches	6,747	2,155	4,246	1,125
Tobacco	3,051	2,019	686	708
Cash	707	1,293	724	2,425
Rock of all kinds	2,906	1,104	1,942	2,026
Cement	668	1,051	1,965	3,607
Indigo	1,489	1,004	1,002	783
Kauliang	5,136	926	907	—
Glassware	549	852	—	630
Flowers, plants, etc.	1,263	721	—	—
Silk cocoons	963	631	605	354
Silk	990	503	162	101
Oilseed Cake	1,504	435	—	3,727
Mill products	45	240	451	740
Rice	15	160	3,053	3,712
Salt	4,598	60	—	—
Brooms	4,020	33	1,757	1,029

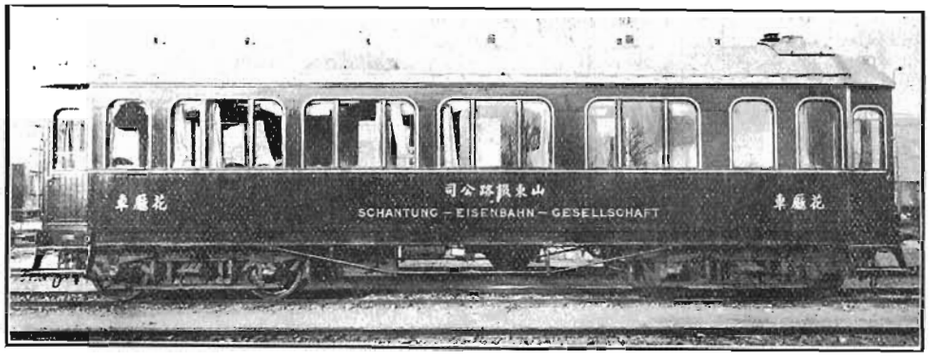
Shantung Railway Company Balance Sheet

BALANCE ON DECEMBER 31, 1912.

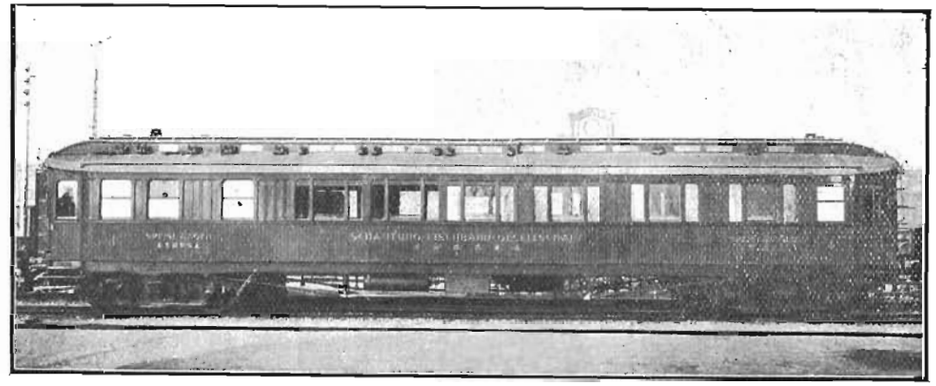
		Mark	Pf.		Mark	Pf.
Construction Account	M 56,929,324.15			Assets	54,000,000	—
Addition	„ 1,192,664.—	58,031,968	15	Outstanding Coupon stock	14,650	—
Trees	M 91,822.68			Creditors	25,624	41
Nurseries and plantations	„ 13,503.27	105,325	95	Repairs and Improvement funds	3,397,280	11
Supplies		1,028,233	26	Reserve funds	1,181,276	12
Goods billed en route		507,870	—	Special Reserve funds	1,181,276	12
Stocks and Bonds		717,380	—	Disposition and Valuta funds	800,000	—
Cash in hand:				Profit and Loss accounts	5,596,296	61
In Berlin	M 1,034.83					
In Tsingtau	„ 30,383.79	31,418	62			
Debtors:						
In bank	M 3,879,274.46					
Outstanding	„ 1,894,941.93	5,774,216	30			
		66,196,412	47		66,196,412	37

PROFIT AND LOSS ON DECEMBER 31, 1912

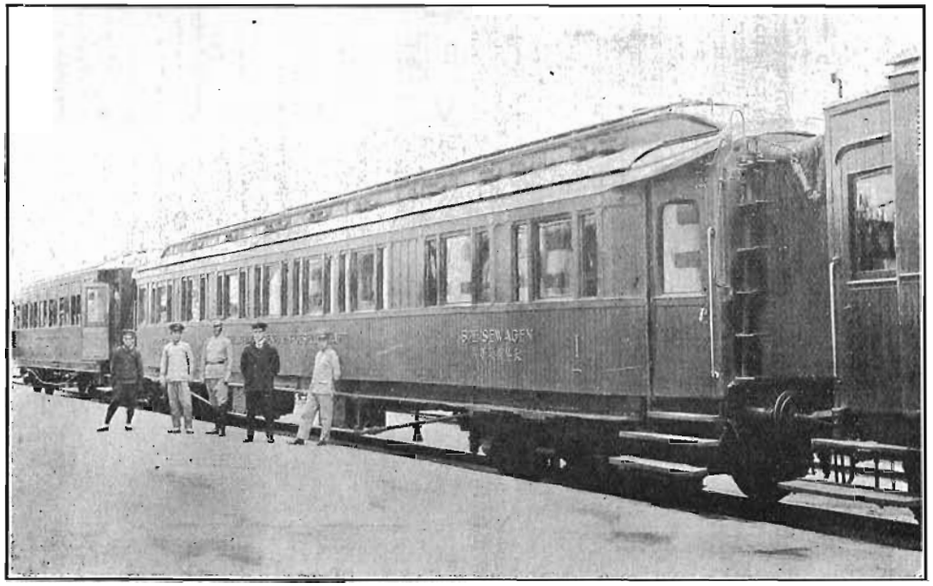
Debit		Mark	Pf.	Credit.	Mark	Pf.
Expended in operation		2,464,629	99	Brought forward for 1901	304,791	48
Addition to Repair and Improvement funds		405,000	—	Gross receipts and Interest	8,987,675	12
Disposition and Valuta funds		800,000	—			
Loss by exchange		26,540	—			
Net profit		5,596,296	61			
Distribution:						
Reserve funds	M 264,575.25					
Special Reserve funds	„ 264,575.25					
Dividend 5 per cent.	„ 2,700,000.—					
Directors' fees	„ 103,117.73					
Government Taxes:	„ 116,235.46					
Extra dividend 2½%	„ 1,350,000 —					
Special shares	„ 675,000.—					
Carried forward	„ 122,792.02					
	M 5,596,296,61	9,292,466	60		9,292,466	60



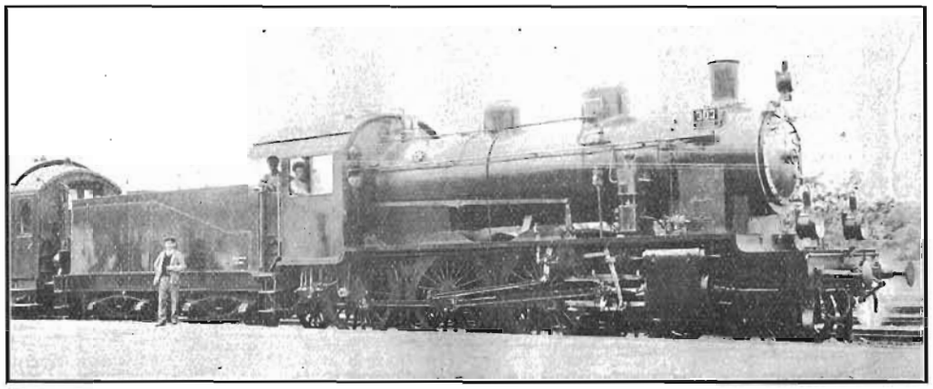
A Saloon Car.



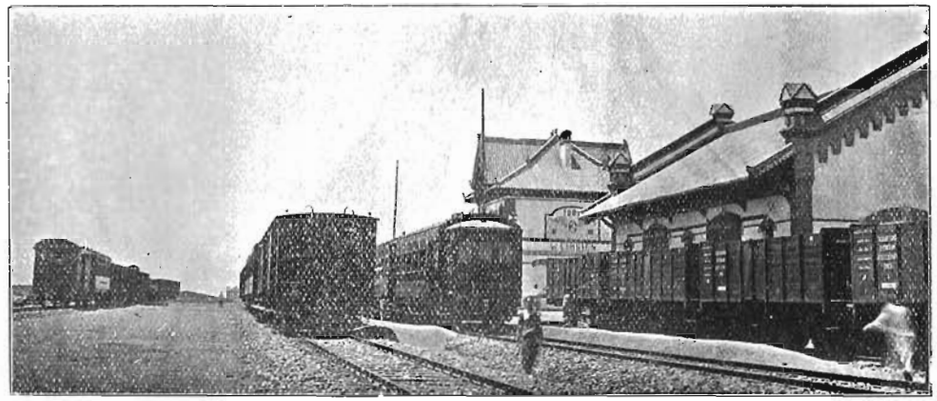
Restaurant Car.



An Express Train.



An Express Locomotive.



Weihsien Station.

SHANTUNG RAILWAY—Car and Locomotive Types.

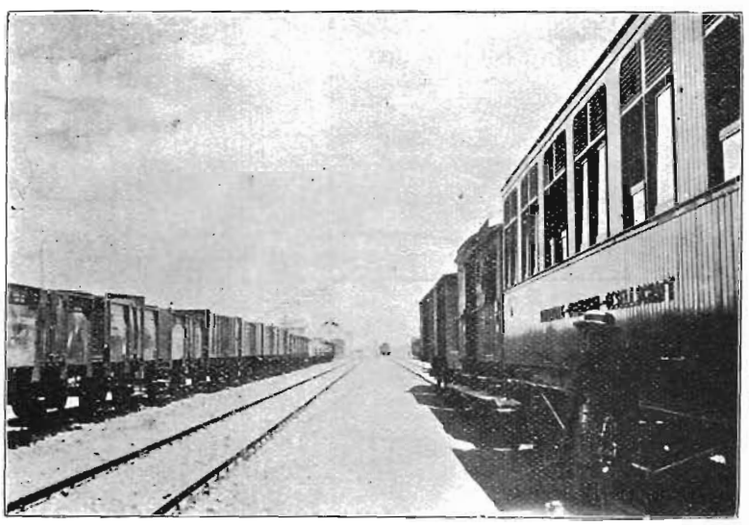
DISTRICTS SERVED BY THE RAILWAY.

There are 55 stations on the main line and four on the Poshan branch.

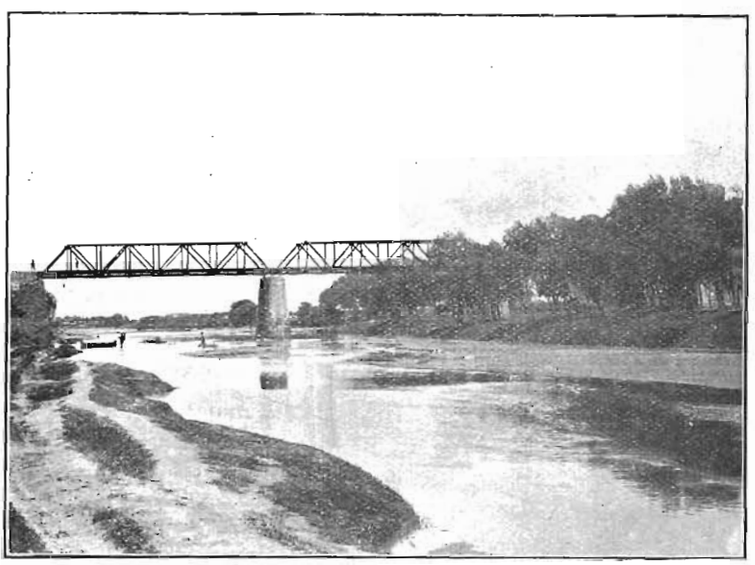
The principal places served are as follows:—

	Distance. Kiloms.	Remarks.
Tsingtau	...	Seaport, fortress and summer health resort. Permanent civil population, about 30,000.
Grosser Hafen	3	Station for Tsingtau harbour, &c.
Syfang	8	Railway repairing sheds, &c.
Tsangk'ou	18	Small ports on shore of Kiaochou Bay
Nükuk'ou	28	
Nanchuan	47	Point of access for Chimo, also for Pingfu Chou and surrounding straw braid producing district.
Kiaochou	81	Capital of sub-prefecture. Very large city. Was in occupation of German troops till the beginning of 1906. Point of access for straw braid districts. Point of junction with proposed South Shantung (Kiaochou-Ichou Fu-Tsinan Fu) line, sanctioned in the Kiaochou convention with Germany of 1898, but not made.
Kaomi	107	District city, like Kiaochou, evacuated by the German troops in 1906.
Fangtze	183	A flourishing town with a European population of about 100, and a Chinese population of several thousand, has grown up here in connection with the coal mines of the Schantung Bergbau Gesellschaft. It is the chief coal mining centre in Shantung. The first shaft sunk (252 metres) is about a mile south of the railway, with which it is connected by a short branch. A second shaft (about 350 metres) has been completed this year, close to the railway on the north.
Weihsien	196	A large city, probably 100,000 inhabitants. Centre of many manufactures, silk, embroidery, &c. Point of access for silk centre of Chang-i Hsien. A prospectus has been published of a proposed railway hence to Chefoo (226 kiloms.) via Chang-i Hsien, Laichou Fu, Huang Hsien, and possibly Têngchou Fu. The 17th regiment of the Luchün army has been stationed here for over a year. A "Branch Commercial Settlement," under the direction of the Tsinan Fu Commercial Settlement Bureau, was laid out here, and declared open to foreign trade and residence in 1906, but has not been developed. The town has long been a centre of missionary activity:—Union College (Presbyterian and Baptist), with extensive premises to the east of the city.
Ch'ingchou Fu	255	Capital of department. Formerly a large city, now much decayed. A Manchu garrison formerly occupied a separate walled city to the north. Centre of missionary activity, with Theological College, &c.
Tsê-ho Tien	270	Railway bridge over Tsê ho. Place wholly of historical interest. Lintzu Hsien, 10 miles to the north, is the ancient capital of the kingdom of Ch'i, some twenty of the kings being buried in tumuli close to the railway line.
Chiu-ling Chên	290	Hill to the north of the line containing iron ore (64 per cent.)
Ch'ang-tien	302	Junction with branch line to Poshan
On branch line—		
Chih-ch'uan (Tsechuan)	32	Large district city. Important coal mining centre. Schantung Bergbau Gesellschaft has a mine at Hungshan, connected by short branch with Chih-chuan station.

A Pointsman at Work.

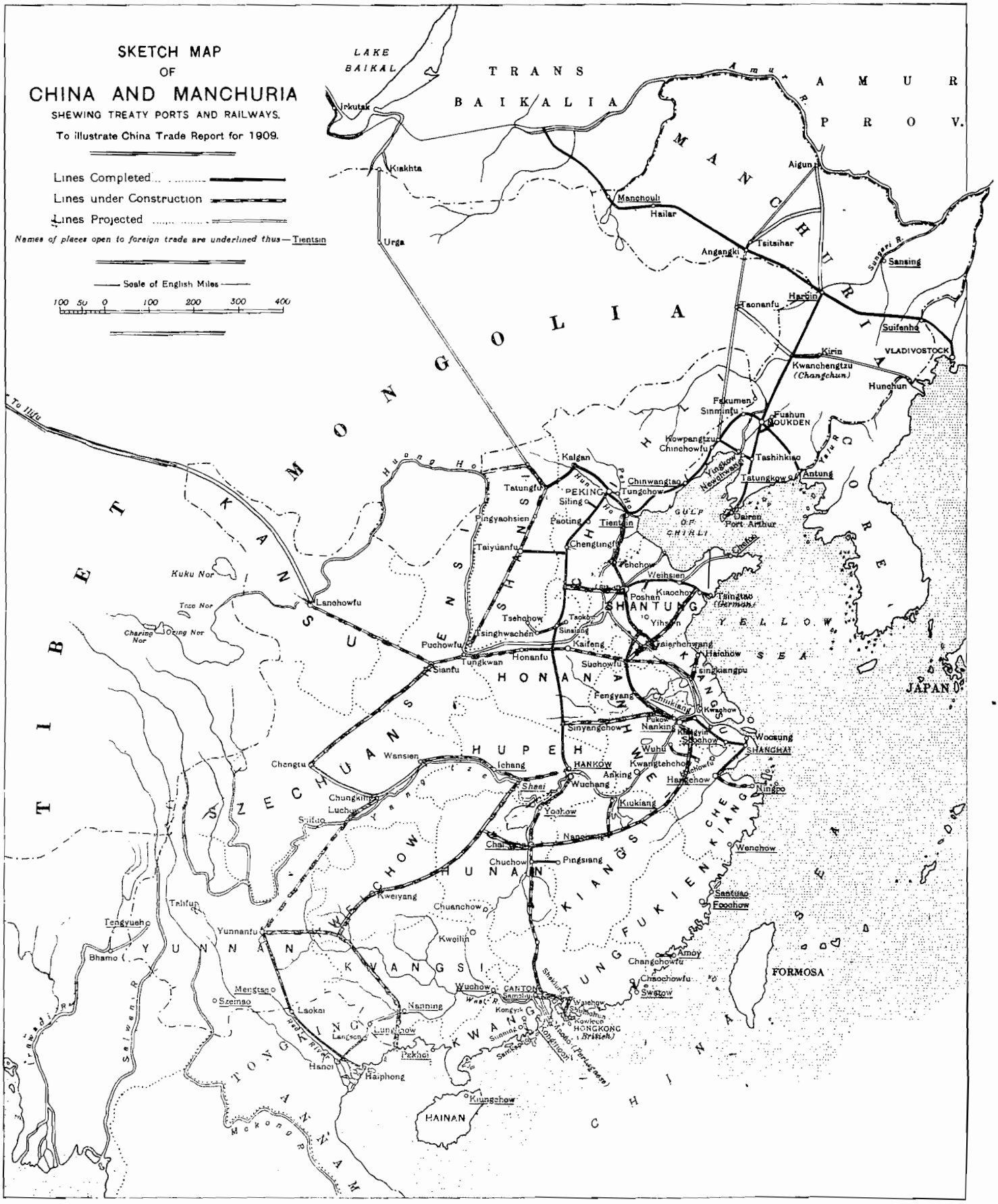


Tsingtau Train Yard.

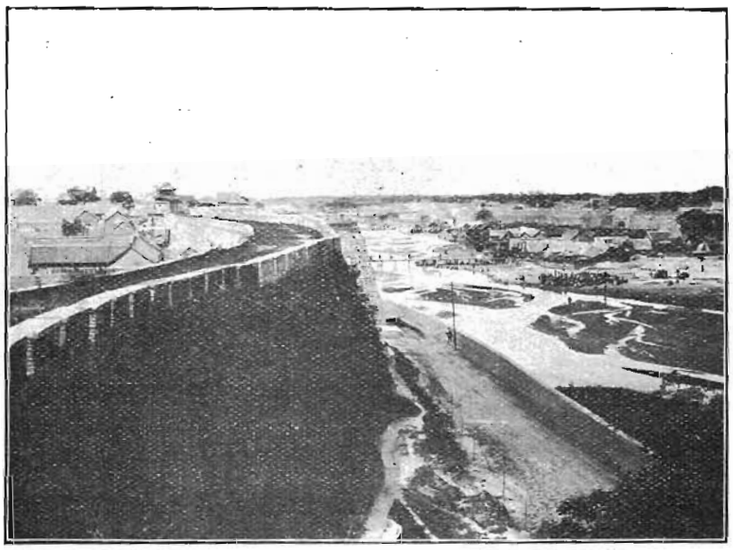


A Bridge over the Pailang-ho near Weihsien.

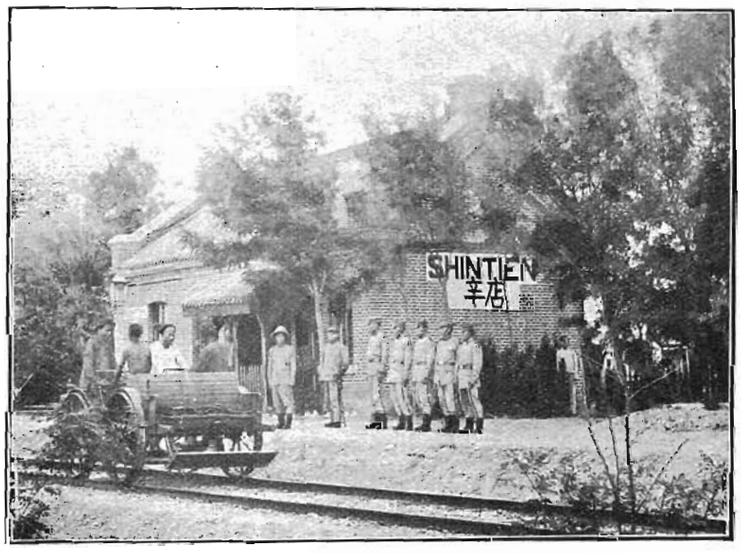
SHANTUNG RAILWAY VIEWS.



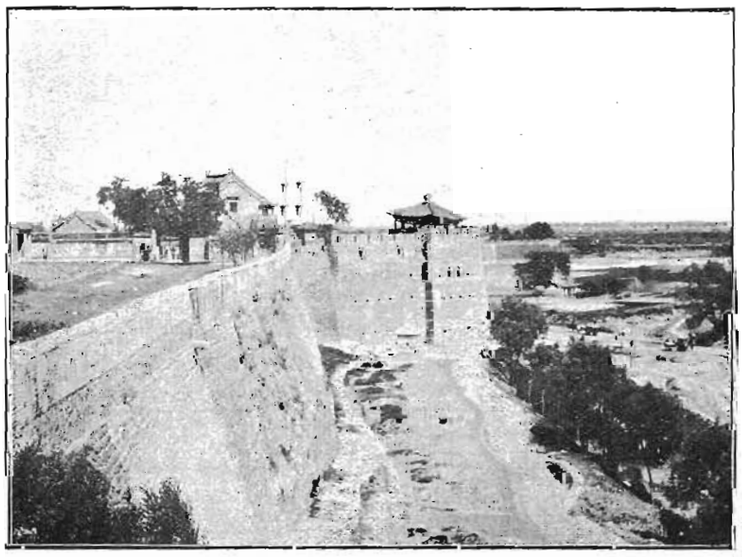
RAILWAY MAP OF CHINA, showing relation of the Shantung lines to the general system.



The Pailang River at Weihsien.



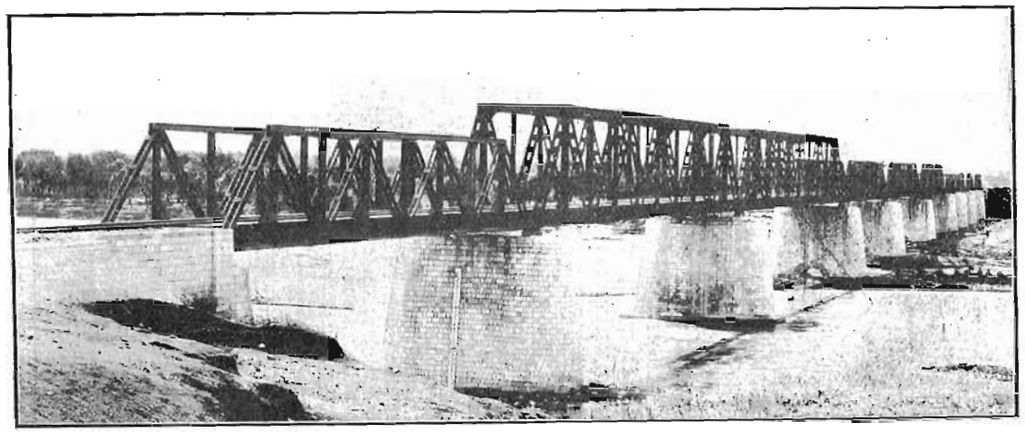
Guard at Shintien Station.



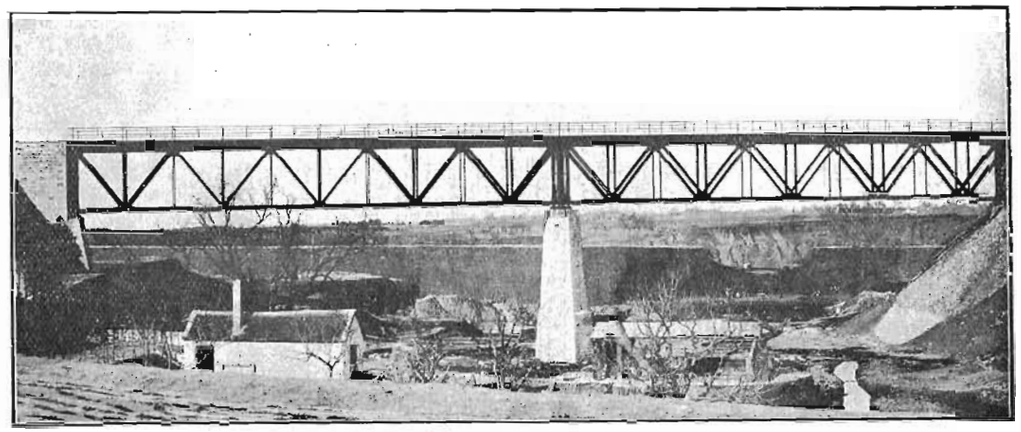
The Wall of the City of Weihsien.

SHANTUNG RAILWAY VIEWS.

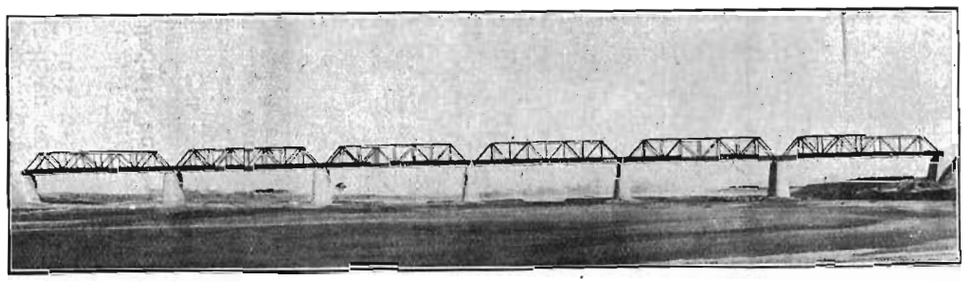
Poshan	43	Large district city in very populous valley. Many native coal pits, also most important centre of glass manufacture in China. Besides many purely native establishments, the large factory of the Poshan Glass Company, with all modern appliances, was opened in February, 1907.
Main line resumed—		
Chouts'un	320	Large town, equal to or larger than Wei-hsien. Principal centre of silk manufacture in Shantung. Point of access for Tsoup'ing Hsien (important missionary centre) to north, also for P'u-t'ai and other places on lower Huang-ho. Branch "Commercial Settlement" laid out and opened to foreign trade and residence, under direction of Tsinan Fu Commercial Settlement Bureau, in 1906, but, as at Wei-hsien, not developed.
Mingshui	361	Important centre of rice cultivation. From Chouts'un to Mingshui the railway threads an intricate valley between high hills on both sides.
Lungshan	378	Large market town. Coal mines a few miles to the south at a place called Puchuan.
Tsinanfu, East	406	Small branch line (2 miles) to bank of Hsiao-ch'ing Ho at Hung-t'ai Chiao, continued thence by light truck line to Lo-k'ou, another 4 miles. From Huang-t'ai Ch'iao steam launch traffic on the canal to Yang-chiao-kou, 146 miles, has been attempted, but water is generally insufficient. Junk traffic is considerable. From Yang-chiao-kou steamers run during a portion of the year to Chefoo, sometimes calling at Lung-k'ou, and junks ply to many places on the Shantung and Manchurian coasts.
Tsinanfu, North-west ...	409	Close to north wall of city. The station, being found the most convenient for passenger traffic for the greater part of Tsinanfu, has lately been enlarged.
Tsinanfu, West	412	Terminus. Adjoins the "Commercial Settlement" opened to foreign trade and residence in 1906. For various reasons the foreigners resident in Tsinanfu have only in a few instances taken lots and built in the Settlement, where, however, the new German Consulate and premises of the Deutsch-Asiatische Bank are conspicuous buildings. Oil installations of the Asiatic Petroleum Company and the Standard Oil Company are near the railway line. Seven German firms and several Japanese have premises or agencies in the city, but the only British concern (apart from the Asiatic Petroleum Company already mentioned) which has agents frequently at Tsinanfu is the British-American Tobacco Company, whose wares and travellers penetrate all parts of the province and appear to do a thriving business. Other foreigners at Tsinanfu are missionaries or teachers, &c., engaged by the Chinese authorities of the provincial capital in connection with the government hospital and the various colleges.



Bridge at Kilometre 144; length 272 metres.

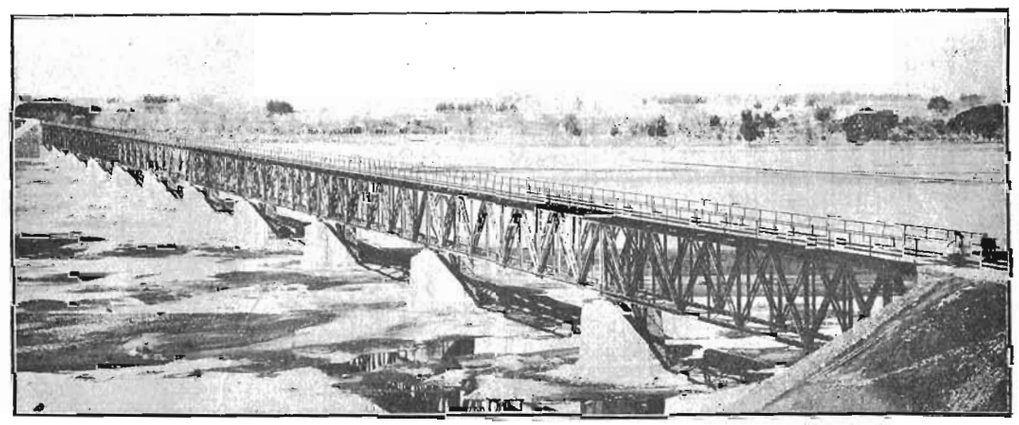


Bridge at Kilometre 316; length 80 metres.



The Taku-ho Bridge.

Lantsun Station.



Bridge at Kilometre 258; length 470 metres.

SHANTUNG RAILWAY—Types of Bridges.

CONCESSION GRANTED BY THE IMPERIAL GERMAN GOVERNMENT FOR THE CONSTRUCTION AND OPERATION OF A RAILWAY FROM TSINGTAU TO TSINANFU

In response to a request made by the Deutsche-Asiatischen Bank (German-Asiatic Bank) representing the Syndicate, formed for the establishment of a German-Chinese Company with the title of "Schantung Eisenbahn-Gezellschaft" (Shantung Railway Company) the Imperial Government agrees to grant to said company a concession for the construction and operation of a railway in the Chinese Province of Shantung, from Tsingtau via Weihsien to Tsinanfu with a branch line, starting from a point on the main line, to Poshan, according to the provisions of the German-Chinese Treaty of March 6, 1898, and under the following conditions:—

1.—The construction and maintenance of the railway shall be proceeded with by a German-Chinese Company, to be organised by the Syndicate upon the basis of the contract hereto attached.

This company will have its domicile at first in Berlin but will nevertheless remove the same to Tsingtau within six months from the date of granting the concession.

2.—The capital for the construction and operation of the railway is fixed at 54 million Marks.

Care is to be taken that Germans as well as Chinese may participate in the public subscription to the stock of the company. More especially, shall subscriptions be opened in the suitable commercial centers of East Asia, and the amounts there subscribed shall receive proper consideration

3.—The management of the railway shall be domiciled at Tsingtau The election of the President of the Board of Directors as well as the Chief Operating Official must be approved by the Imperial Government.

4.—The following regulations govern the construction of the railway:

I.—In the building of the railway lines the special preparatory work shall determine the best possible connection with the most important coal fields, more especially with those of Weihsien and Tzechuan as well as the chief cities and towns between Tsingtau and Tsinanfu, which, on account of their population or other significance, must be considered in their relation to railway traffic.

In the construction of the railway station at Tsinanfu consideration is to be given to the connection with the Hoang-ho and the continuation of the railway on the one side to the southern boundary of the Province of Shantung in the direction of Kiaochou (Chinkiang), on the other side following the North Boundary of the same Province in the direction of Tientsin and Chengting.

The Company must obtain from the Imperial Governor permission to carry out the railway line, in accordance herewith, in the territory of Kiaochou; outside the territory the permission of the Imperial Minister in Peking is to be obtained.

The lines may be built for single track; however sufficient land for the construction of a double track must be provided.

The gauge shall measure 1,435 meter.

II.—German material shall be used, as far as possible, in the construction of the railways.

III.—The completion and opening of the main line from Tsingtau to Tsinanfu, and of the branch line to Poshan must follow within a period of 5 years, dating from the grant of the concession, and that of the railway section from Tsingtau to Weihsien within a period of 3 years. Should the company be prevented from the fulfillment of these obligations by force major, the fixed periods shall be respectively extended.

5.—The following stipulations shall obtain for the operation of the railways:

I. The Governor of Kiaochou is to be notified of the proposed opening of the railway on any one section at least three days in advance of the time set.

II. The railway is to be equipped in due time with rolling stock according to the requirements of traffic. The material used shall be, as far as possible, of German origin.

The company binds itself to permanently maintain the railways, buildings, workshops and rolling stock, including the telegraph plants, in good order and condition, in order that transportation may be made with security and according to the stipulations of the present contract. The company shall be held responsible therefor by the Imperial Government, but no stricter regulations shall be issued for railways outside of the Protectorate then those in force on the majority of the railways in China, built and operated under similar circumstances. The railway police regulations applicable within the Protectorate shall be in force along the line of railroad operation.

III. The number of trains to be despatched is left to the discretion of the company, but it must meet the necessities of traffic as far as possible. The establishment of a schedule and changes therein are subject to the approval of the Governor of Kiaochou, with the understanding that no greater obligations shall be required of the company than in the case of the majority of other railways built and operated under similar circumstances in China.

The time table is to be made public in due time.

IV. The fixing of the tariff for transporting passengers and freight on every railway section is left to the discretion of the company for the first ten years, beginning on January 1st following the opening of the railway, but the maximum rates for the transportation of coal, to be fixed by the Imperial Government after consultation with the company, may not be exceeded. Subsequent to this time, that is after the expiration of the ten years specified above, it is optional with the Imperial Government to fix the maximum rates for the various classes of passengers and goods every five years; within these limits the company shall be at liberty to fix the charges of transportation. All maximum rates to be fixed by the Imperial Government shall, however, not be lower than the maximum rates of the majority of railways built and operated under similar circumstances in China.

Rates for transportation as well as changes therein must be made known to the Governor before adoption, and shall be published in due course. Increased rates, should they not be approved by the Governor, shall come into force three months after publication only.

V. Use of the railway is to be granted to everybody under similar conditions. Especially the rates fixed for transportation are to apply equally to all persons or goods of the same class. Facilities of transportation which under fulfillment of the same conditions do not benefit everybody are inadmissible. Exceptional tariffs require the approval of the Governor of Kiaochou.

Upon demand of the Imperial Government the company is obliged to allow other contractors to connect with the railway by means of private connecting tracks or junction railways upon refunding to the Company the expenses incurred thereby, should the Company itself not build connecting tracks or junction railways within a reasonable time. The Company is further obliged to undertake the operation of the private connecting tracks and furnish the necessary means of transportation, for which it is to receive suitable compensation, and further, for a likewise reasonable compensation, to allow the passages of the necessary transportation material of the junction railways.

6.—Should the company culpably offend against one of the obligations imposed upon it by this document and not comply in due time with the injunction given by the Imperial Government to make good the offense, the Imperial Government may hold the company responsible for the losses accruing to the traffic through its fault, in an adequate sum of money.

Whether there has been a culpable offense on the part of the company, and whether in consequence of such offense the order of the Imperial Government has not been properly complied with, and what amount shall be paid for accrued damages, shall be finally determined by a Court of Arbitration to be formed as provided for in Section 7.

All moneys hereafter to be paid by the company shall be paid into the Treasury of the Imperial Government of Kiaochou.

Should a culpable action of the company relative to one of the imposed obligations contained in this document result in the railway section not being constructed or operated in due course, the Imperial Government is authorized to take over itself, or cause to be taken over by a third party, the construction or extension of the railway and the organisation or continuation of the traffic, all at the expense of the company. The question as to whether such a culpable action on the part of the company exists is also to be finally decided by the Court of Arbitration to be formed according to paragraph 7 of this document.

7.—The Court of Arbitration, provided for in Article 6, shall be formed in such manner that each party appoints two arbitrators and these shall elect an umpire. The Imperial Government will name its arbitrators to the company and, at the same time, request the company to appoint their arbitrators within four weeks, counting from the day of the handing in of the summons, and to name them to the Imperial Government. If the company does not comply with this summons in due time, the Imperial Government will also elect the necessary arbitrators. The umpire is elected by a majority vote. In the case of a tie the umpire will be appointed by the President of the Hanseatic Upper District Court. The regulations of the Tenth Book of the Civil Process, unless otherwise stated in this document, shall hold good for the arbitration proceedings.

8.—During the life of the concession, conveyed in this document, the Imperial Government will not grant to any other contractor the right to construct a railway section, running parallel in the same direction with the concessionary lines to the same points, or touching at several of their principal places.

9.—The Imperial Government of Kiaochou shall cede to the company such land in the Protectorate necessary for the construction of the railway, provided it is the property of the Government and, according to the declaration of the Governor, not indispensable for Government purposes, upon payment of the price prevailing in the locality, but which shall not exceed 125,000 marks. The Imperial Authorities will, as far as possible, assist the company at their request to acquire more land if necessary, should it lie in the protectorate or in the Province of Shantung.

10.—The Imperial Government will grant to the company, upon their request, the concession for the construction and operation of the railway from Tsinanfu to Ichoufu and from Tsingtau to Ichoufu, under conditions corresponding to those contained in this document.

As regards these railways, the company is free to await the end of the year 1908 before presenting this request. The concessions not solicited in due time can be otherwise granted by the Imperial Government.

11.—The company shall pay a contribution from the yearly net profits of the railway to be applied to the expenditures of the Government for the harbor works in the Bay of Kiaochou and also to the general running expenses of the Protectorate, which contribution is to be estimated as follows:

If after the opening of the traffic of the railway from Tsingtau to Tsinanfu, the net earnings of the railway would permit the payment of a yearly dividend of more than 5 per cent. of the paid up capital which is used in operating the railway, there shall be paid into the Government funds of Kiaochou the twentieth part of any surplus over 5 to 7 per cent., the tenth part of any surplus over 7 to 8 per cent., the fifth part of any surplus over 8 to 10 per cent., the third part of any surplus over 10 to 12 per cent., and the half of any surplus over 12 per cent.

12.—The Imperial Government reserves the right to purchase the railways to be constructed by the company in accordance with this concession, after the end of sixty years, calculated from the date of the grant of the concession. The Imperial Government further reserves the right to buy at the end of every five years, including a one year's previous notice, all establishments, rolling stock, appurtenances, inclusive of the reserve and renewal funds earned by the railway enterprise, upon payment of twenty-five times the amount of the average dividends paid during the last five years from its earnings, or at least however, the commerciai value of the existing railway plants, workshops and rolling stock. In case there should be any doubt in ascertaining the value, a Court of Arbitration, formed according to Article 7, shall decide. Should no sum obtain the majority of the votes cast the one nearest the average of the sums named by the individual arbitrators shall be accepted. The decision of the Court is final.

13.—The transfer, in whole or in part of the concession granted to the company, according to this document the rights and obligations appertaining to it in exercise of the same, under maintenance of its concessionary character, as well as any alteration in the contract, must, to become valid, have the approval of the Imperial Government.

The transfer of the concession itself or parts thereof to another company, not German or German-Chinese, is prohibited.

14.—The Imperial Government reserves the right of appointing a commissioner according to Article II of the second part of the German, Chinese Treaty of March 6, 1898.

15.—A copy of this concession document will be delivered to the company as soon as the company is regularly formed by the Syndicate.

16.—The charges for all expenses incurred in this document, especially the stamp duties, shall be borne by the company.

Baden-Baden June 1, 1899.

IMPERIAL CHANCELLOR,
Prince zu Hohenlohe-Schillingsfurst.

KIAOCHOU-TSINANFU RAILWAY AGREEMENT

The Agreement for the construction of the Kiaochou-Tsinanfu Railway was signed on March 21, 1900. The terms of the Agreement are as follows:—

ART. 1. According to the second clause in the Second Section of the German-Chinese Convention after the Tsaochou Mission Affair, the building of a railway line from Kaiochou to Tsinanfu by a Chino-German Company is sanctioned, and in this Company, both German and Chinese subjects shall be at liberty to invest money.

At first, the management of this Company shall rest with the Germans, temporarily. A report of the shares taken up by the Chinese shall be made every six months to the Shantung Bureau of Foreign Affairs, and as soon as these shares shall exceed the amount of Tls. 100,000, the Governor of Shantung shall appoint a satisfactory official to become a member of the company and assist in clearly defining the regulations.

ART. 2. If said Company shall hereafter establish any branch office within the Province of Shantung, this Province will then appoint a satisfactory Chinese official for said branch office to assist in matters of consultation and operation.

ART. 3. The Governor of Shantung shall appoint a special official to assist in the locating of the railway; the high local officials or prominent gentry of various places will also be invited to assist. This will be done in order that the conditions of the various places may receive no injury. But as to scientific questions, these shall all be settled by the Engineer, and in all matters relating to the buying of land, the specially appointed official must be consulted. When the route has been investigated, the Company must prepare a map of the lines showing all the conditions, the scale to be 25,000 to 1, which map is to be handed in to the Governor of Shantung, after which the matter of buying the land will be considered, and as soon as the land is all purchased, the work on the construction can begin. But as to the buying of the land, this matter must be managed as heretofore, with uniform promptness and peacefulness, that the owners of land may have no excuse for putting obstacles in the way, which would result in delaying the work. The Company will be permitted to buy only so much land as is actually needed in the construction of the railway, including what will afterwards be needed for the operation of the line. For small car-housing stations, it will be permitted to buy a piece of land about 630 metres long (1 metre=2 ft. 9.6 in. official measure, and 1 ft. official measure=338 millimeters), and about 70 metres wide. For large car-housing stations it will be permitted to buy a piece of land about 730 metres long and about 100 metres wide. For railway stations of medium size a piece of land 850 metres long and 130 metres wide can be bought adjoining the walls (of the cities). For large railway stations the amount of land that can be bought will depend upon the special conditions of the case, except only that the necessary amount shall be the limit. When it is necessary, however, to buy earth to use in making fills or elevations, it will not be understood that this must all come from within the limits set down above.

ART. 4. In the construction of the line, whenever the Company finds a place upon its land where a space should be left for water to flow—whether a bridge should be built or a sluice opened—they must leave satisfactory space for the flow, in order that no harm or hindrance shall come to the populace or their fields.

ART. 5. The railroads must not injure or obstruct any city walls os public works within the Province, nor any important strategical positionr that may be used for protection.

ART. 6. In constructing the railway, the Company must go around small villages and market towns, also ancestral halls, temples, graveyards, dwellings, and water-ways, orchards and vegetable gardens. These must not be made to suffer on account of the railway. And as for specially large and well arranged graveyards, these must receive special regard. In cases where it is impossible to avoid them, the matter should be thoroughly looked into and discussed by both parties, and the high local officials must be requested to give two months' notice to the owner of the property, that he may construct a new graveyard at another place modeled after the original one. Any person in such a case, moreover, must not be subjected to any financial loss.

ART. 7. In buying land the Company must use the Chinese units "kung" and "ch'ih" for measuring, one "kung" equalling five "ch'ih." (1 ch'ih=338 millimeters, and in any locality one "mu"—360 "kung" or 9,000 square "ch'ih"). The Provincial Treasurer will furnish standard lengths for the "kung" and "ch'ih," that both parties may be guided by them. As to the Government tax, that matter will be dealt with in the same manner as is done in other parts of China where foreigners have bought land for the construction of railways.

ART. 8. In transporting materials and men for the measurement and survey of the land, the Company must keep off of the fields and vegetable gardens of the people, and in cases where real damage has been done by trampling on the fields, and action therefor is brought, the Company will be required by the local high officials to make good the loss, out of pity for the abused party.

ART. 9. Whenever the local officials are requested to appoint some one to assist the company, said company must provide such person with money for meals; and this money must be kept in an entirely different account from that in which the money is kept for the purchase of land from the owners. The latter should be handed over to the local officials, to be received by them and handed over in turn to the owners. At the same time the local officials must send the Company a certificate of purchase for the land.

ART. 10. If the Company desires to rent any buildings or rooms along the line of the railway, they must first notify the high local officials, whereupon the said officials will consult with the owners and draw up a contract for the rent on behalf of the Company.

ART. 11. All materials necessary for the construction of the railroad must be bought at the market price, and a fair price given therefor; or else the local officials may be requested to buy them for the Company.

ART. 12. All silver and other money used by the Company must be exchanged justly at the rate of the place at the time.

ART. 13. The Company will not be permitted to act upon its off from the main line to connect with the mines, for the purpose of bringing down rock, lime, etc., such, for example, as the branch line at Poashan Hsien connecting with the main line—such roads will not come under thih prohibition. But whenever it is desired to build one of these short branes

THE TIENTSIN-PUKOW RAILWAY AGREEMENTS

THE PRELIMINARY AGREEMENT

TIENTSIN-CHINKIANG (NOW PUKOW) RAILWAY; RATIFIED MAY 24TH, 1899.

This Preliminary Agreement relating to the construction of railways between Tientsin and Chinkiang, is made between their Excellencies Hsu and Chang; duty authorized to act on behalf of the Imperial Government of China, hereinafter called "the Imperial Directors" of the one part; and (*a*) the Deutsche-Asiatische-Bank; (*b*) the Hongkong and Shanghai Banking Corporation for themselves and on behalf of Messrs. Jardine, Matheson & Co., as joint agents for the British and Chinese Corporation Limited, hereinafter called "the Syndicate" of the other part.

1. The Imperial Government of China authorizes the Syndicate to issue an Imperial Government 5 per cent. gold loan for an amount of about £7,400,000, this amount being subject to modification later after the completion of survey.

2. The loan is designed to provide the capital for the construtions of Government railway lines from a point at or near Tientsin, through Titchow and Tsianfu to Thsien near the southern frontier of Shantung, hereinafter known as the northern part of the Tientsin-Chinkiang Railway lines, and from Thsien to Kuachao (Chinkiang) on the Yangtze Kiang, hereinafter known as the southern part of the Tientsin-Chinkiang Railway lines, the total length of these lines being about 982 kilom., equal to about 1,800 Chinese li.

3. The capital so provided will include the funds required for rolling-stock and other equipment, and for working the lines, together with interest on the loan during the period of construction, which is estimated to occupy about five years from the date of the loan, but which will finally be fixed after survey.

4. The rate of interest for the loan shall he 5 per cent. per annum on the nominal principal, and shall be paid during the time to be fixed for the construction out of the proceeds of the loan, and afterwards out of the revenue of the lines named, in half-yearly instalments, according to the amounts and dates of a schedule which will be attached to the Final Agreement.

5. The term of the loan shall be fifty years Repayment of principal shall commence in the eleventh year from the date of the loan, and shall be made by a yearly sinking fund in shares to be determined in the Final Agreement to the Deutsche-Asiatische Bank, and the Hongkong and Shanghai Banking Corporation in yearly instalments out of the revenue of the lines according to the amounts and dates of the schedule to be attached to the Final Agreement.

6. In the event of the Imperial Government of China wishing to redeem, after the lapse of thirty years from the date of the loan, the outstanding amount of the loan, or any portion of it not yet due, from funds *bona fide* belonging to the Chinese Government or subscribed by Chinese merchants, the conditions for such redemption must first be arranged with the Syndicate when the time arrives.

7. The yearly payments due for amortization and the half-yearly payments due for interest, except as otherwise provided in Clause 4, shall be made in accordance with the amounts and dates of a schedule to be attached to the Final Agreement, in shares to be determined by the Final Agreement, out of the joint net revenues of the railway lines to the Deutsche-Asiatische Bank and the Hongkong and Shanghai Banking Corporation by the Boards of Commissioners hereinafter mentioned, who shall hand to those banks, at their branches in Shanghai, twenty-one days before the due date named in the schedule, funds in Shanghai sycee sufficient to meet such payment in sterling in Europe, the rate of exchange for which shall be settled with those two banks on the same day on a fair basis.

In reimbursement of expense connected with the service of interest and principal of the loan, the two banks will receive a commission of ¼ per cent. on the annual loan service.

8. The Imperial Government of China hereby engages that the interest and principal of this loan shall duly be paid in full, and should the revenues of the railways not be sufficient to provide for the due and full payment of interest and repayment of principal of this loan the Imperial Directors must memorialize the Throne, and the Imperial Government of China will then make arrangements to ensure that the amount of deficiency shall be met from other sources and handed over to the banks twenty-one days before the due date of the funds required to complete full payment of interest and repayment of principal.

This clause to be open to reconsideration in the Final Agreement.

9. This entire loan shall be secured by a first mortgage on the permanent way, rolling-stock, and entire property, together with the revenue of the lines named in Clause 2. No further loan, charge, or mortgage shall be charged on this security, except with the written consent of the two banks, until the present loan is returned. In the event of default in payment of interest or repayment of principal of this loan on due date the railway lines and property so mortgaged shall be handed over to the Syndicate, to be dealt with in such a manner as may be legal and necessary for the full and effective protection of the bondholders. When the loan is completely redeemed, Clause 29 of this Agreement shall take effect.

10. The Syndicate will be authorized to issue to the subscribers to the loan, bonds for the total amount of the loan in pounds sterling in such form, in such languages, and for such amounts as shall appear advisable to the Syndicate, and these bonds shall be sealed in China by the Imperial Directors and in Europe by the Minister for China, in Berlin or London, as evidence that the Imperial Government of China is bound thereby as debtor of the loan. Provision will be made in the Final Agreement for the case of bonds lost, stolen, or destroyed.

11. All bonds and coupons and payments made and received in connection with the service of this loan shall be exempt from all Chinese taxes and imports for ever.

12 All details necessary for the prospectus and connected with the service of the interest and repayment of the principal of this loan, not explicitly provided for by the Final Agreement, shall be left to the arrangement of the Syndicate, who will be authorized to issue a prospectus of the loan as soon as possible after the signing of the Final Agreement.

The Imperial Government of China will instruct the Chinese Ministers in Berlin and London to co-operate with the representatives of the Syndicate in any matters requiring conjoint action, and the Chinese Minister in Berlin will sign the prospectus of the loan as required by the Rules of the Berlin Stock Exchange.

13. The loan shall be floated in one or more series at the discretion of the Syndicate, due regard being had to the interest of China; but the floating of the loan shall not be delayed more than necessary, subscriptions being invited by the Syndicate in Europe and in China from both European and Chinese on equal conditions.

14. The price of the loan shall be 90 per cent net on the nominal principal to the Chinese Government. The proceeds of the loan shall be paid to the credit of a Tientsin-Chinkiang Imperial Government Railway account with the Hongkong and Shanghai Banking Corporation, London. The payment into the credit of these accounts shall be made in such instalments and on such dates as the conditions allowed to the subscribers to the loan shall admit.

Interest at a rate to be arranged from time to time shall be granted on the credit balance of the railway accounts.

After deduction of the funds required for the service of interest and for commission on this service during the time of construction, the Deutsche-Asiatische Bank will hold the proceeds with accrued interest to the order of the Board of Commissioners appointed for the northern part of the Tientsin-Chinkiang Railway lines, and the Hongkong and Shanghai Banking Corporation will hold the proceeds with accrued interest to the order of the Board of Commissioners appointed for the southern part of the Tientsin-Chinkiang Railway lines. The Commissioners, in drawing the sums necessary for the construction, shall give notice to the banks fourteen days before the day on which they are required.

15. If during the time of construction the whole amount of the instalments with accrued interest to be paid by the Syndicate should, after deduction of the sums necessary for the service of interest on the loan, not be sufficient for the construction of the railway lines, the amount of deficiency shall be provided by a supplementary loan to be issued by the Syndicate, the interest and other conditions of which are to be the same as in this Agreement, but the price must be arranged when the time arrives.

If after the completion of the lines there should be a balance at credit of the Tientsin Chinkiang Railway account, the Syndicate shall transfer such unused balance to the credit of the loan service reserve fund, hereinafter mentioned as a provision for payments to which the Government is bound by Clause 8 of this Agreement.

16. If before the publication to the prospectus for the issue of loan any political or financial crisis should take in Europe or elsewhere, by which the markets and the prices of existing Chinese Government stocks are so affected as to render the successful issue of the loan impossible on the terms herein named, the Syndicate shall be granted such extension of time for the performance of their contract as the circumstances demand, or shall have the right to withdraw from their contract with the Chinese Imperial Government which shall in that case become null and void.

17. The Deutsche-Asiatische Bank on the one side, and the Hongkong and Shanghai Banking Corporation for themselves, and on behalf of Messrs. Jardine, Matheson & Co., as joint agents for the British and Chinese Corporation Limited, on the other side, shall take the loan in shares to be agreed upon by the Syndicate, and without responsibility for each other.

18. The northern part of the railway lines shall be constructed, equipped, and worked on behalf of the Imperial Chinese Government by

Deutsche-Asiatische Bank, and the southern part of the railway lines shall be constructed, equipped, and worked on behalf of the Imperial Chinese Government by the British and Chinese Corporation Limited, under conditions as follows:—For each of these parts a Board of Commissioners shall be appointed to superintend the construction, equipment, and working of the railway lines in accordance with regulations to be arranged between the Imperial Directors and the Deutsche-Asiatishe Bank and the British and Chinese Corporation Limited.

19. An office shall be provided for the Imperial Directorate, and a head office shall be established for each Board of Commissioners. The Board of Commissioners for the northern and southern parts of the lines respectively, appointed to superintend the construction and administration, shall each consist of five members, two Chinese managers representing the Imperial Directors and nominated by them, and three European members, namely, a representative of the Bank concerned, the manager and the Chief Engineer, to be nominated by the Deutsche-Asiatische Bank, and the British and Chinese Corporation Limited.

In case any foreign or Chinese members of the Boards of Commissioners do not work well together, it shall be open to the Imperial Directors, the Deutsche-Asiatische Bank, and the British and Chinese Corporation Limited, to mutually discuss means to arrange and deal with the matter.

The foreign and Chinese railway staff, including a Ti-tiao, shall be appointed by the Boards of Commissioners, who will report the appointment to the Imperial Directors. In the event of an important appointment the two Chinese members of the Boards may first consult the Imperial Directors.

The principal members of the railway staff shall be, capable and experienced Europeans, but Chinese with sufficient experience in engineering or traffic may also be appointed.

Foreign and Chinese members of the railway staff shall, in the event of incapacity or misconduct, be dismissed by the Boards of Commissioners who will inform the Imperial Directors of the same.

The salaries of the five members of each Board of Commissioners and of the foreign and Chinese railway staff shall be arranged by the Deutsche-Asiatische Bank, the British and Chinese Corporation Limited, and the Imperial Directors, and paid by the head office of their respective sections.

20. The plans, estimates, and all matters relating to survey must be submitted for approbation to the Board of Commissioners. The Chief Engineer shall indicate to the Chinese Commissioners the land which it is necessary to purchase, and which must be sufficient for the construction of a permanent way with double lines and dependencies, and the Chinese Commissioners shall thereupon effect such purchases at a price to be based on a scale to be arranged after survey. In the event of the route proposed by the Chief Engineer passing through towns, villages, graveyards, or other points where much obstruction is encountered, the Chief Engineer will, together with the Board of Commissioners, consider means of diverting the proposed railway route in order to avoid difficulties.

21. After completion of the survey and due inquiry as to the prevailing provincial likin and customs dues, the Imperial Directors will arrage with the Deutsche-Asiatische Bank and the Britith and Chinese Corporation Limited, regulations for the payment of likin and duty upon merchandise and live stock in transit over the railway lines.

22. All materials necessary for the construction and working of the lines, obtained either from foreign countries or from other provinces of China, and the revenues derived from the railway, shall be exempt from duty of taxation of all kinds, and the Imperial Government of China will instruct the customs and likin authorities accordingly.

All material, plant, and goods shall be ordered from the Deutsche-Asiatische Bank and the British and Chinese Corporation Limited, on conditions to be arranged in the Final Agreement.

The plans, estimates, and requisitions for material shall be submitted to the Board of Commissioners by the Chief Engineer for reference at their discretion to the Imperial Directors, and the same shall be furnished by the Deutsche-Asiatische Bank and the British and Chinese Corporation on the best possible terms.

Due consideration will be extended to materials from the Hanyang Iron Works, if available when required, and of a quality satisfactory to the Chief Engineers of the Syndicate.

23. The Deutsche-Asiatische Bank and the British and Chinese Corporation Limited shall, during the working of the lines, maintain the railways, buildings, works, rolling-stock and dependencies in good order and condition.

24. Branch lines or extension in connection with the Tientsin-Chinkiang Railway lines that may appear profitable or necessary later on shall be the subject of negotiations between the Imperial Directors and the Syndicate.

25. The tariff to be introduced by the European Manager shall be approved by the Boards of Commissioners, who will take into consideration the tariffs of other existing railway lines in China, while keeping in view the necessity for attracting traffic. The European Manager may also be instructed to enter into arrangements for tariffs on through traffic connecting lines. In case of war, foreign or internal, the railway lines shall be reserved in the first instance for the transport of Chinese troops, commissariat, and munitions ot war under the order of Imperial Directors, and at half the ordinary tariff rates, and the railways shall not engage in any service injurious to China. In case of famine, grain will also be transported over the lines at half the ordinary tariff rate, under orders of the Imperial Directors.

26. All payments made and received in connection with the railway lines will be subject to the control of the Boards of Commissioners, and after the line is working estimates of receipts and expenditure shall be similarly submitted to the Boards. Regular accounts shall be furnished through the Imperial Directors to the Railway and Mining Bureau of the Tsung-li Yamen and the Board of Revenue, Peking. All payments made must be represented by Chinese or foreign vouchers as the case may be.

27. The profits from working completed sections of the railways during the time of construction shall be credited to railway construction account.

28. Should any traffic business be apparent later on as likely to benefit the Imperial Government of China and increase the earning power of the railway lines, the Deutsche-Asiatische Bank and the British and Chinese Corporation Limited shall represent the same to the Imperial Directors, and request them to obtain the necessary authority to arrange the business.

29. The Deutsche-Asiatische Bank and the British and Chinese Corporation Limited shall work the lines on behalf of the Imperial Government of China until the present loan is redeemed. As soon as the loan has been completely redeemed this Agreement shall become null and void, and the railway lines and property named in this Agreement shall be handed over to the absolute disposal of the Chinese Government.

30. The annual net revenue is understood to be that resulting from the gross receipts of the passengers and goods traffic and the income from other sources, after deducting all working expenses, including maintenance of the permanent way, repairs and renovation of machinery and rolling-stock, and all expenses of administration, besides deducting an amount to be determined by the Deutsche-Asiatische Bank and the British and Chinese Corporation Limited as sufficient for accumulating a reserve fund for extraordinary improvements or repairs. Of the surplus of the joint net annual revenue of the northern and southern railway lines, after payments of interest and repayment of principal of the loan, first, a participation of 20 per cent. will be granted to the Syndicate in remuneration for their management of the construction and the working of the railway lines; secondly, an amount equal to 10 per cent. of the gross earnings will be transferred to a loan service reserve fund, deposited with the two banks, and the remainder will be at the disposal of the Imperial Government of China. An account of the said loan service fund will be rendered yearly to the Railway and Mining Bureau of the Tsung-li Yamen and to the Board of Revenue, and the fund will be drawn upon only in the case of the revenue of the railway line being insufficient to meet the service of interest and principal of the loan. On redemption of the loan being completed the balance of this fund will revert to the Chinese Government.

31. The powers and authority given and delegated to the Imperial Directors by the Imperial Government of China shall, in the case of their promotion or removal, be transferred to their successors, and the Deutsche-Asiatische Banks and the Hongkong and Shanghai Banking Corporation, Messrs. Jardine, Matheson & Co., and the British and Chinese Corporation Limited, may, subject to all their obligations, transfer or delegate all or any of their rights, powers, and discretions to any German of English Company, director, or agents, with or without power of further transfer and sub-delegation.

32. Differences arising between the Imperial Directors and the Syndicate will be taken up and decided with equity and justice by the Tsung-li Yamen on the one side, and the Minister for Germany and the Minister for Great Britain in China on the other side.

33. As soon as possible after the signature of this Agreement the Engineers of the Syndicate will be authorized by the Imperial Chinese Government to survey and report upon the proposed railway lines, when subject to such report being satisfactory to the Syndicate, this Preliminary Agreement will be ratified by the Syndicate and replaced by a Final Agreement containing all necessary details. Modifications in the conditions of this Preliminary Agreement may be made, subject to the consent of both parties.

34. The provisions of this Preliminary Agreement shall, immediately after signature, be ratified by an Imperial Edict (*) which shall be communicated by the Tsung-li Yamen to the Ministers for Germany and Great Britain in Peking.

35. Five sets of this Agreement are executed in English and Chinese, one set to be retained by the Tsung-li Yamen, one by the Railway and Mining Bureau, and one by each Contracting Party.

In the event of any doubt arising regarding the interpretation of the Contract, the English text shall rule.

(*) The Edict was issued on the 24th May, 1899 vide Blue Book. China, No. 1 of 1900, p. 190.

THE FINAL TIENTSIN-PUKOW RAILWAY LOAN AGREEMENT

JANUARY 13, 1908

The following is a translation of the Agreement between the British and Chinese Corporation Ltd. and the Wai Wu Pu signed in Peking on Jan. 13, 1908, or the tenth day, twelfth moon, thirty-third year of Kwang Hsu:—

1.—The Chinese Government hereby sanctions the German and British Banks Syndicate issuing a loan for five million sterling, £5,000,000, at 5% which shall be styled the "Chinese Government five per cent Tientsin-Pukow railway loan."

2.—This loan is to furnish the capital wherewith to construct a Government railway from the vicinity of Tientsin to connect the existing Peking-Shanhaikwan line via Techow, Chinanfu to Ihsien along the southern boundary of Shantung, and this line will hereafter be known as the northern section of the Tsin-Pu or Tientsin-Pukow line; and from Ihsien to Pukow on the bank of the Yangtze opposite Nanking which shall hereafter be known as the southern section of the Tsin-Pu railway. The total distance of the two sections is 1085 kilometers or equal to 2,170 Chinese li. The survey of the line will be subject to revision by the Director General.

3.—The capital will be used for the construction of the line, the purchase of the land and rolling stock, and to meet the current working expenses of the line when in operation, also the payment of the interest on the loan while the line is being constructed. The period of construction calculating from the date of commencement is estimated as four years, such commencement to take place within six months of the signing of the agreement, and within this period the syndicate shall place £500,000 at the disposal of the Director General, the money to be drawn by him either in China or from Europe as a first instalment of the loan. The whole or part of this £500,000 shall be deducted with interest from the proceeds of the first sale of the bonds and bear interest not exceeding 6%.

4.—The interest of the loan, which is 5%, shall be payable from the date of issue of the loan and during the time of construction, payable half-yearly. It will be paid by the Chinese Government either from the proceeds of the loan or from other sources as considered advisable.

5.—The loan is made for a term of 30 years, the repayment to commence at the end of ten years, and with the exceptions noted in Art. 6 of this agreement the amortisation to the banks concerned, Deutsch Asiatische Bank, and Hongkong and Shanghai Corporation, Ltd., shall be made in half-yearly instalments out of the revenue of the line or from such other source as the Chinese Government may decide, payment being made in all cases 14 days previous to the date due calculated from the date of issue.

6.—After the expiration of ten years the Chinese Government may if it so desire redeem the outstanding amount of the loan or any part of it any time before the twentieth year on the payment of a premium of 2½%, or £102 10s. on every £100 bond. After the twentieth year redemption can be made without premium, but in any case six months' notice must be given by the Chinese Government, and the method of redemption shall be by the drawing of additional bonds at each ordinary drawing.

7.—The Deutsch Asiatische Bank and the Hongkong and Shanghai Banking Corporation having been appointed representatives for the loan by the British and German companies to receive the half-yearly payments due for amortisation and interest, referred to in Articles 4 and 5, they shall be made, in accordance with the amounts and dates attached to this agreement by the Director General of the Railway, in Shanghai or in Tientsin, in Shanghai or Tientsin Sycee sufficient to meet such payments in gold in Europe, exchange for which shall be settled with the said Banks on the same day. The railway administration may arrange exchange within six months previous to any due date for the repayment of interest and principal. Payment can be made in gold if the Chinese Government have gold funds in Europe, not remitted from China for the purpose, and desire so to use them.

The Hongkong and Shanghai Banking Corporation and Deutsch Asiatische Bank will receive a commission of one quarter per cent for their expenses as Agents.

8.—The Imperial Government of China engages that the interest and principal of this loan shall duly be paid in full, and if the revenue of the Railway or the proceeds of the loan do not suffice for full payment, the Director General shall memorialise the Throne on the amount of deficiency and make payment to the Banks on the date upon which funds are required.

9.—The loan is secured in the following manner:—

1. By likin and internal revenues of the province of Chihli, 1,200,000 Haikuan Taels a year:

2. By likin and internal revenues of the province of Shantung 1,600,000 Haikuan Taels a year, and

3. By the revenue of the Nanking Likin Collectorate 900,000 Haikuan Taels a year and of the Huai-an Native Customs 100,000 Haikuan Taels a year in the province of Kiangsu.

The provincial revenues as above are declared free from all other loans, charges or mortgages.

So long as principal and interest of the loan are regularly paid, there shall be no interference with these provincial revenues. If principal or interest of the loan be in default at due date, then, after a reasonable postponement internal revenues of the three provinces sufficient to provide the amounts above stated shall forthwith be transferred to, and be administered by, the Imperial Maritime Customs, in the interest of the bondholders. And so long as this loan or any part thereof shall remain unredeemed, it shall have first claim over all future loans, on the above mentioned revenues of the three provinces. It is understood and agreed that so long as this loan is unredeemed the Railway shall under no circumstances be mortgaged nor its earnings given as security to any other object.

Should the Government decide to revise the Customs tariff with the view of abolishing likin, this agreement will not oppose such revision except that the likin required as security for the loan must not be decreased or abolished without previous arrangement with the Syndicate and after other source of revenue has been guaranteed.

10.—The Syndicate is authorized to issue bonds for the total amount of the loan and the form of the bonds shall be arranged in consultation with the Director General or the Chinese Ministers in London and Berlin. The bonds shall be printed in Chinese and English or Chinese and German and be signed by stamp of the Director General and his seal, the Chinese Minister in London or Berlin shall also put his seal upon each bond with his signature, as a proof that the sale of the bonds is authorized by, and is binding upon the Chinese Government. The representatives of the Syndicate in London and Berlin shall countersign the bonds as agents.

In the event of bonds being lost, or destroyed, the Syndicate shall notify the Director General and the Chinese Minister in London and Berlin, who shall authorize the Syndicate to insert an advertisement in the public newspapers notifying that payment of the same has been stopped according to the customs of the country concerned, and if the bonds are not recovered, the Director General, or the Chinese Minister in London or Berlin, shall issue duplicate bonds.

11.—All bonds and payments made and received in connection with the service of this loan shall be exempt from all Chinese taxes and imposts during the currency of this loan.

12.—The Syndicate is authorized to issue the regulations of the loan as soon as possible after the signing of this agreement, and the Chinese Government will instruct the Chinese Ministers in London and Berlin to assist the Syndicate in any matters connected therewith and to sign the regulations of the loan.

13.—The loan will be issued in two or more instalments of bonds, the first issue of £3,000,000, as soon as possible after the signing of this agreement and not later than twelve months from the date. The price to the Imperial Chinese Government of the first instalment shall be ninety-three per cent of the face value. Further issues shall be effected in time to prevent aay delay of the work of construction, in amounts to be determined by the Director General, and the price payable to the Chinese Government in respect of these series shall be the same rate as to the public, less charges of 5⅛ points by the Syndicate. Subscriptions will be invited by the Syndicate in Europe and in China both from Chinese and Europeans on equal conditions, preference being given to the application of the Chinese Government if application is made before the issue of the regulations.

14.—The income of the loan shall be paid to the account of Tientsin-Pukow Government Railway with the Hongkong and Shanghai Banking Corporation and the Deutsch Asiatische Bank in China, London or Berlin, as the case may be. Interest at the rate of 4% shall be granted on the portion of this account kept in London and Berlin, and interest on the portion kept in China will be allowed at the Banks' rates for current account or fixed deposits, as may be arranged. In addition to interest and commission the Banks will hold the funds for the Director General, who shall not draw more than £20,000 without giving the Banks ten days' notice. Expenditure of funds shall be in amounts to suit the progress of construction of the railway by orders on the Hongkong and Shanghai Banking Corporation and the Deutsch Asiatische Bank respectively, signed by the Managing Director of the Railway or, in his absence, by his representative, and accompanied by his certificates stating the nature and cost of the work to be paid for.

Such amounts as may be required in China may at any time be transferred by the Managing Director, at his discretion, to Shanghai, the transfers being effected through the Hongkong and Shanghai Banking Corporation and the Deutsch Asiatische Bank respectively, and the transferred funds shall remain on deposit with those Banks until required for Railway purposes.

The accounts of the Railway will be kept in Chinese and English in accordance with modern methods, and will be supported by all necessary vouchers. During the period of construction the accounts will be open at any time to an inspector appointed and paid by the Syndicate. His duty will be to certify the due expenditure of the funds in accordance with the provisions of Article 3 of this Agreement. The Railway Administration will publish annually at the end of the financial year a report in Chinese and English of the working accounts and receipts of the railway, which report may be purchased by the public on application.

15.—If during the time of construction the proceeds of the present loan should not be sufficient to complete the construction and equipment of the line, the deficiency shall be provided, in the first place, from such

Chinese funds as may be available so as to permit continuance of the work, any balance then uncovered being supplemented by a further foreign loan for the amount required, to be issued by the Syndicate. The interest and other conditions of such supplementary loan will be the same as in the present agreement. If after the completion of the line there should be a balance at credit of the railway account, such unused balance will be transferred to the credit of the interest reserve fund mentioned in Article 21 as a provision for payments for which the Imperial Chinese Government is responsible under this agreement.

16.—If, before the first sale of the bonds, any political or financial event should take place causing the pricee of Government stocks to fall so as to make the successful issue of the loan impossible on the terms named, the Syndicate shall be granted further extension of time, but not beyond eighteen months from the date of this agreement. If within this time limit the first bonds have not been issued, then this contract shall become null and the money paid by the Syndicate under the provisions of Article 3 shall be by the Chinese Government with interest, but without any other compensation or remuneration whatsoever.

17.—The construction and control of the railway will be entirely in the hands of the Imperial Chinese Government. For the work of the northern and southern sections respectively the Chinese Government will select and appoint fully qualified German and British Chief Engineers, acceptable to the Syndicate. These two Chief Engineers shall be under the orders of the Managing Director, or his duly authorized representative, and will carry out all the wishes of the Railway Administration with regard to the plan and construction of the line. They must pay all due respect to the Director General and the Managing Director. The terms of their respective agreements will be arranged by the Director General on his sole authority.

On the completion of the line the Imperial Chinese Government will administer both sections as one undivided Government Railway and will appoint an Engineer-in-Chief, who during the period of the loan shall be a European, without reference to the Syndicate.

18.—For all important purchases of railway materials tenders shall be called for by the Managing Director; and the Banks and Syndicate as Agents shall purchase the materials required on the terms most advantageous to the Railway, and shall charge the original cost of same with a commission of five per cent. It is understood that no orders for materials shall be executed or any expenditure incurred without due authorization by the Managing Director.

The Railway Administration shall have the right to reject on arrival in China materials which do not come up to specifications. At equal rates and qualities goods of German and British manufacture shall be given preference over other goods of foreign origin for the northern and southern sections respectively. The Railways Administration reserves the right, while paying the above stipulated commission to the said Agents in respect of all purchases of foreign materials, to avail itself of the services of other Agents in China or abroad should it see fit to do so.

No commission shall be paid to the Agents except as above provided; but it is understood that the Railway Administration shall provide out of Railway funds for the remuneration of Consulting Engineers whenever their services are engaged.

With a view to the encouragement of Chinese industries, preference will be given, at equal prices and qualities, over British, German or other foreign goods to Chinese materials, and goods manufactured in China. No commission will be paid on purchases of such materials and goods.

19.—Branch lines in connection with the railway line mentioned in this Agreement may be built by the Imperial Chinese Government with funds at their disposal from Chinese sources, if thought advisable, and if foreign capital is required preference will be given to the Syndicate.

20.—The Syndicate is granted the right to retain two hundred thousand pounds sterling (£200,000) out of the first issue of the bonds instead of 20% of the profits of the railway as first proposed. No further payment in respect of profits will be allowed on any subsequent series of the loan, or on any supplementary loan.

21.—After payment of interest and repayment of principal of the loan for any year, the Railway Administration will deposit with the Deutsch Asiatische Bank and the Hongkong and Shanghai Banking Corporation in Shanghai or Tientsin any surplus revenue of the railway line for that year up to the amount required to pay the following year's instalments of interest on the loan; the rate of interest on the deposit being arranged with the Banks from time to time with due regard to the conditions of the market.

22.—The Deutsch Asiatische Bank and the Syndicate may transfer or delegate all or any of their rights, powers, and discretions thereunder to any German or British Company, Directors or Agents with power of further transfer subject to the approval of the Director General.

23.—This Agreement is signed under authority of an Imperial Edict dated the tenth day of the Twelfth Moon of the 33rd year of Kuang Hsu, corresponding to the 13th day of January one thousand nine hundred and eight, Western Calendar, which has been officially communicated to the Ministers of Great Britain and Germany in Peking by the Wai Wu Pu.

24.—Five sets of this Agreement are executed in English and Chinese three sets to be retained by the Imperial Chinese Government and two by the Syndicate. In any case of dispute the English text will be taken as correct.

TIENTSIN-PUKOW RAILWAY SUPPLEMENTARY LOAN AGREEMENT

SEPTEMBER 28, 1910.

Whereas by an agreement made at Peking on the 10th day of the 12th month of the 33rd year of Kuang Hsü corresponding to the 13th day of January 1908, between

His Excellency Liung Tun Yen, Acting Junior Vice President of the Waiwupu, duly authorised to act on behalf of the Imperial Government of China,

of the one part,

and A. The Deutsch Asiatische Bank, Shanghai,
B. The Chinese Central Railways Limited, London,
thereinafter termed the Syndicate,
of the other part,

the Syndicate were authorised to issue, and did issue, a 5% Gold Loan for £5,000,000 for the construction and equipment of a line of railway from Tientsin to Pukow in the Empire of China: and WHEREAS, in order to permit of the uninterrupted continuance of the work of construction provision was made in Article 15 of the aforesaid Loan Agreement, hereinafter called the Original Loan Agreement, for the issue by the Syndicate of a Supplementary Loan of which the interest and other conditions as well as the price payable to the Chinese Government should be governed by the terms of the original loan agreement which still remains in full force and effect;

This Agreement is now made at Peking this twenty fifth day of the eighth month of the second year of Hsüan Tung, corresponding to the twenty eighth day of September 1910, between;

The Director General and Assistant Director General of the Tientsin-Pukow Railway, Their Excellencies The Grand Councillor and Assistant Grand Secretary Hsü Shih Shang, and the Acting President and Senior Vice-President of the Board of Posts and Communications Shen Yün Pei, duly authorised to act on behalf of the Imperial Government of China,

of the other part,

and A. The Deutsch Asiatische Bank, Shanghai,
B. The Chinese Central Railways Limited, London,
hereinafter called the Syndicate
of the other part,

Article 1. The Imperial Government of China authorises the Syndicate to issue a 5% Gold Loan for an amount of four million eight hundred thousand pounds sterling (£4,800,000). The loan shall be of the date on which the first series of bonds is issued to the public and shall be called "The Imperial Chinese Government 5% Tientsin-Pukow Railway Supplementary Loan."

Article 2. The loan is designed to provide further capital for the construction of a Government railway line from a point connecting the Imperial Railways of North China at or near Tientsin through Techou and Tsinanfu to Ihsien near the Southern frontier of Shantung, hereinafter known as the Northern Section of the Tientsin-Pukow Railway line, and from Ihsien to a point at or near Pukow (opposite Nanking on the Yangtsze Kiang), hereinafter known as the Southern Section of the Tientsin Pukow Railway line, the total length of these two sections being about 1,085 kilometers, equal to about 2,170 Chinese li.

Article 3. The capital so provided shall be solely devoted to the construction of the Railway line including the purchase of land, rolling stock and other equipment, and to the working of the line and to the payment of interest on the loan during the period of construction, which is estimated at 2 years from the signature of this agreement.

Article 4. The rate of interest for the loan shall be 5% per annum on the nominal principal and shall be paid to the bondholders half-yearly. The said interest shall be calculated from the date on which the loan is issued to the public, and shall be paid by the Imperial Chinese Government during the time of construction either from the proceeds of the loan or from other sources, and afterwards, in the first place, out of the revenue of the Railway, and then from such other revenues as the Chinese Government may think fit to use for the purpose in half-yearly instalments according to the amounts specified in the schedule attached to this agreement and fourteen (14) days before their due dates, Western Calendar, as calculated half-yearly from the date on which the loan is issued to the public.

Article 5. The term of the loan shall be thirty (30) years. Repayment of principal shall commence after the expiry of ten (10) years from the date of the loan, and, except as provided in Article 6 hereinafter, shall

be made by yearly amortisation to the Deutsch Asiatische Bank and the Hongkong and Shanghai Banking Corporation out of the revenue of the line or such other revenues as the Chinese Government may think fit to use for the purpose, according to the amounts specified in the schedule attached to this agreement, but fourteen (14) days before their due dates, Western Calendar, as calculated from the date on which the loan is issued to the public.

Article 6. If at any time after the lapse of ten (10) years from the date of the loan the Imperial Chinese Government should desire to redeem the whole outstanding amount of the loan, or any part of it, not yet due for repayment in accordance with the schedule of repayments hereto attached, it may do so until the twentieth (20th) year, by payment of a premium of two and one-half (2½) per cent, on the face value of the bonds (that is to say, by payment of a hundred and two pounds and ten shillings (£102.10) for each £100 bond) and after the twentieth (20th) year without premium; but in each and every case of such extra redemption, the Imperial Chinese Government shall give six (6) months notice in writing to the Syndicate, and such redemption shall be effected by additional drawings of bonds, to take place on the date of an ordinary drawing, as provided for in the Prospectus of the Loan.

Article 7. The Deutsch Asiatische Bank and the Hongkong and Shanghai Banking Corporation having been appointed, by the German and British parties of the Syndicate, respectively, Agents for the service of the loan the payments due for amortisation and interest, referred to in Articles 4 and 5, shall be made, in accordance with the amounts of the Schedule attached to this agreement, and fourteen (14) days before their due dates as fixed by Articles 4 and 5, to these Banks by the Director General of the Railway, who shall hand to the said Banks in Shanghai or in Tientsin fourteen (14) days before the said due dates, funds in Shanghai or Tientsin Sycee sufficient to meet such payments in Gold in Europe, exchange for which shall be settled with the said Banks on the same day, the Railway Administration having however, the option of settling exchange with the two Banks at any date or dates within six (6) months previous to any due date for the repayment of interest and principal. These payments may, however, be made in Gold if the Imperial Chinese Government should happen to have Gold funds "bona fide" at their disposal in Europe not remitted from China for the purpose and desire so to use them.

In re-imbursement of expenses connected with the payment of interest and the repayment of principal of the loan, the Hongkong and Shanghai Banking Corporation and the Deutsch Asiatische Bank will receive a commission of one-quarter (¼) per cent on the annual loan service.

Article 8. The Imperial Government of China hereby engages that the interest and principal of this loan shall duly be paid in full, and should the revenue of the Railway and/or the proceeds of the loan not be sufficient to provide for the due and full payment of interest and repayment of principal, the Director General shall memorialise the Throne and the Imperial Government of China will thereupon make arrangements to ensure that the amount of deficiency shall be met from other sources and handed over to the Banks on the date upon which funds are required, to complete full payment of interest and repayment of principal.

Article 9. The loan is hereby secured:—

1. By a second charge on the likin and internal revenues of the three provinces enumerated in Article 9 of the Original Tientsin Pukow Railway Loan Agreement amounting to Haikuan Tls. 3,800,000 a year, after satisfaction of all the obligations contained in the said Article.

2. By a first charge on the following additional revenues, calculated on the basis of the maximum annual payments of principal and interest due:—

A. Likin and internal revenues of the Province of Chihli to the amount of Haikuan Tls. 1,000,000 a year;

B. Likin and internal revenues of the Province of Shantung to the amount of Haikuan Tls. 1,200,000 a year;

C. Revenue of the Nanking Likin Collectorate [to the amount of Haikuan Tls. 600,000 a year] and of the Huai-an Native Customs [to the amount of Haikuan Tls. 100,000 a year] in the Province of Kiangsu;

D. Likin and internal revenues of the Province of Anhui to the amount of Haikuan Tls. 700,000 a year.

With the exception of the first charge created by the Original Loan Agreement the Provincial revenues as above stated are hereby declared to be free from all other loans, charges or mortgages.

So long as principal and interest of the loan are regularly paid, there shall be no interference with these provincial revenues, but if principal or interest of the loan be in default at due date, then, after a reasonable period of grace, likin and suitable internal revenues of the four provinces sufficient to provide the amount above stated shall forthwith be transferred to, and be administered by, the Imperial Maritime Customs, in the interest of the bondholders. And so long as this loan or any part thereof shall remain unredeemed, it shall have priority both as regards principal and interest, subject to the obligations created by Article 9 of the original loan agreement over all future loans, charges and mortgages charged on the above-mentioned revenues of the four provinces.

No loan, charge or mortgage shall be raised or created which shall take precedence of, or be on equality with this loan, or which shall in any manner lessen or impair its security over the revenues of the four provinces as above stated; and any future loan, charge or mortgage charged on the said revenues of the four provinces shall be made subject to this loan, and it shall be so expressed in every agreement for every such future loan, charge or mortgage. It is understood and agreed that so long as this loan is unredeemed the Railway shall under no circumstances be mortgaged nor its receipts given as security to any other party.

In the event of the Chinese Government, during the currency of this loan entering upon definite arrangements for the revision of Customs Tariff accompanied by stipulations for decrease or abolition of likin, it is hereby agreed, on the one hand, that such revision shall not be barred by the fact that this loan is secured by likin and provincial revenues, and, on the other hand, that whatever likin is required to provide the security of this loan shall neither be decreased nor abolished except by previous arrangement with the Syndicate and then only in so far as an equivalent is substituted for it in the shape of a first charge upon the increase of Customs Revenue consequent upon such revision.

Article 10. The Syndicate is hereby authorised to issue to subscribers to the loan, Bonds for the total amount of the loan for such amounts as may appear advisable to the Syndicate. The form of the Bonds shall be settled by the Syndicate in consultation with the Director General or the Chinese Ministers in London and Berlin. The Bonds shall be engraved in Chinese and English or Chinese and German as may be required; they shall bear the facsimile of the signature of the Director General and of his seal of Office, in order to dispense with the necessity of signing them all in person: and it is hereby agreed that the Chinese Minister in London shall, previous to the issue of any Bonds, put his seal upon each Bond with a facsimile of his signature, as a proof that the issue and sale of the Bonds are duly authorised by, and binding upon, the Imperial Chinese Government, and the representatives of the Syndicate in London shall countersign the bonds as Agents for the issue of the loan.

In the event of bonds issued for this loan being lost, stolen or destroyed, the Syndicate shall immediately notify the Director General and the Chinese Minister in London and/or Berlin, as the case requires, who shall authorise the Synnicate to insert advertisement in the public newspapers notifying that payment of the same has been stopped and to take such other steps as may appear advisable or necessary according to the laws and customs of the country concerned, and should such bonds not be recovered after a lapse of time to be fixed by the Syndicate, the Director General or the Chiniese Minister in London, shall seal and execute duplicate bonds for a like amount and hand them to the Syndicate, by whom all expenses in connection therewith shall be defrayed.

Article 11. All bonds and coupons and payments made and received in connection with the service of this loan shall be exempt from all Chinese taxes and imposts during the currency of this loan.

Article 12. All details necessary for the prospectus and connected with the payment of the interest and repayment of the principal of this loan, not herein provided for, shall be left to the arrangement of the Syndicate in consultation with the Chinese Ministers in London and Berlin. The Syndicate is hereby authorised to issue the prospects of the loan as soon as possible after the signing of this agreement; and the Imperial Government will instruct the Chinese Ministers in London and Beelin to co-operate with the Syndicate in any matters requiring conjoint action and to sign the prospectus of the loan.

Article 13. The loan shall be issued to the public in two or more series of bonds, the first issue to be made to the amount of three million pounds sterling (£3,000,000) as soon as possible after the signature of this agreement, and not later than six (6) months from the date thereof. The price to the Imperial Chinese Government of the bonds shall be the actual rate of their to the public, less flotation charges of five and a half (5½) points retainable by the Syndicate (that is to say, a charge of five pounds ten shillings (£5.10/—) for every £100 bond issued). Subscriptions will be invited by the Syndicate in Europe and in China both from Chinese and Europeans on equal conditions, preference being given to the application of the Chinese Government, provided such application be made before the issue of the prospectus to the public.

If before the issue of this loan has been completed and during the period of construction it is found that the capital to be provided under Article 3 is already sufficient the Director General shall have the power, at his discretion, to dispense with the issue of further bonds

Article 14. The proceeds of the loan shall be paid to the credit of a Tientsin Pukow Government Supplementary Loan Account with the Hongkong and Shanghai Banking Corporation and the Deutsch Asiatische Bank in China, London or Berlin, as the case may be. Payments of loan proceeds into the credit of this account shall be made in instalments and on dates conforming to the conditions allowed to the subscribers to the loan. Interest at the rate of four (4) per cent per annum shall be granted on the credit balance of the portion of this account kept in London and Berlin, and interest on the credit balance of the portion kept in China will be allowed at the Banks' rates for current accounts, or fixed deposits, as the case may be, to be arranged After deduction of the funds required for the service of interest and for commission on this service during the time of construction, the Banks will hold the net proceeds with accrued interest to the order of the Director General, who, in ordering payments of any sums exceeding twenty thousand pounds (£20,000) shall give notice to the Banks ten (10) days before the day on which they are required. Requisitions on the loan funds will be drawn in amounts to suit the progress of construction of the Railway by orders on the Hongkong and Shanghai Banking Corporation and the Deutsch Asiatische Bank respectively, signed by the Managing Director of the Railway or, in his absence, by his duly authorised representative, and accompanied by his certificates stating the nature and cost of the work to be paid for.

Such amounts as may be required in China may at any time be transferred by the Managing Director, at his discretion, to Shanghai, the transfers being effected through the Hongkong and Shanghai Banking Corporation and the Deutsch Asiatisch Bank respectively, and the transferred funds shall remain on deposit with those Banks until required for railway purposes.

The accounts of the Railway will be kept in Chinese and English in accordance with accepted modern methods, and will be supported by all necessary vouchers. During the period of construction the said accounts and vouchers will be open at any time to the inspection of an Auditor, appointed and paid by the Syndicate, whose duties will be confined to certifying to the Syndicate to the due expenditure of the loan funds in accordance with the provisions of Article 3 of this agreement, and to certifying to a monthly statement of the foreign materials purchased by the Railway Administration under the provisions of Article 18 hereinafter. He will arrange with the Railway Administration that his inspections shall take place on such dates and at such intervals as will enable him efficiently to carry out his duties as herein provided. The Railway Administration will publish annually upon the close of its financial year, a report in the Chinese and English languages showing the working accounts and traffic receipts of the Railway, which report shall be procurable by the public on application.

Article 15. If during the time of construction the net proceeds of the present loan with accrued interest should, after deduction of the sums necessary for the service of interest on the loan, not be sufficient to complete the construction and equipment of the Railway line, the amount of deficiency shall be provided, in the first place, from such Chinese funds as may be available so as to permit of the uninterrupted continuance of the work of construction, any balance then uncovered being supplemented by a further foreign loan, for the amount required to be issued by the Syndicate. The interest and other conditions of such supplementary loan will be the same as in the present agreement and the price will be determined as in the case of the present loan. If after the completion of the line there should be a balance at credit of the Railway Supplementary Loan Account such unused balance will be transferred to the credit of the interest reserve fund hereinafter mentioned in Article 20 as a provision for payments for which the Imperial Chinese Government is responsible under this Agreement.

Article 16. If before the publication of the prospectus for the issue of the loan, any political or financial crisis should take place by which the market and the prices of existing Chinese Government stocks are so affected as to render, in the opinion of the Syndicate, the successful issue of the loan impossible on the terms herein named, the Syndicate shall be granted further extension of time but not beyond nine (9) months from the date of this agreement, for the performance of their contract. If within this time limit the first series of the loan shall not have been issued, then this contract shall become null and void.

Article 17. The construction and control of the railway will be entirely vested in the Imperial Chinese Government. For the work of construction of the Northern and Southern Sections respectively the selection and appointment by the Imperial Chinese Government of fully qualified German and British Chief Engineers, acceptable to the Syndicate, which have already been made, will be continued as heretofore. In the event of the Syndicate objecting to any proposed appointment, the cause of such objection shall be definitely stated. These two Chief Engineers shall be under the orders of the Managing Director, or, in his absence, his duly authorised reprepentative, and will carry out all the wishes of the Railway Administration with regard to the plan and construction of the line. In their general conduct they shall pay all due respect to the Director General and the Managing Director. The terms of their respective agreements will be arranged by the Director General on his sole authority.

Whenever appointments are to be made or functions are to be defined of the technical employés on the railway staff, as well as in the case of their dismissal, the Managing Director, or, in his absence, his duly appointed representative, will act in consultation with the Chief Engineer of the section concerned, and, in the case of disagreement the matter will be referred to the Director General whose decision shall be final.

After completion of construction the Imperial Chinese Government will administer both sections as one undivided Government Railway and will appoint an Engineer-in-Chief, who during the period of the loan sha be a European, without reference to the Syndicate.

Article 18. For the Northern and Southern Sections of the Railway respectively the Deutsche Asiatische Bank and the Chinese Central Railways Limited will act as Agents of the Railway Administration, during construction, for the purchase of all metarials, plant and goods required to be imported from abroad. For all important purchases of such materials, tenders shall be called for by the Managing Director; in the case of all tenders, indents and orders for the importation of goods and materials from abroad, the said Agents shall purchase the materials required on the terms most advantageous to the Railway, and shall charge the original net cost of the same plus a commission of five [5] per cent. It is understood that no orders for materials shall be executed or any expenditure incurred without due authorisation by the Managing Director.

In return for payment of commission as above stated, the Deutsch Asiatische Bank and the Chinese Central Railways Limited as Agents within their respective sections, shall be prepared to superintend the purchase of all foreign materials required for the construction and equipment of the Railway, which shall be purchased in the open market at the lowest rate obtainable, it being understood that all such materials shall be of good and satisfactory quality, and that the Railway Administration shall have the right to reject on arrival in China materials which do not come up to specifications. At equal rates and qualities goods of German and British manufacture shall be given preference over other goods of foreign origin for the Northern and Southern sections respectively. The Railway Administration reserves the right, while paying the above stipulated commission to the said Agents in respect of all purchases of foreign materials, to avail itself of the services of other Agents in China or abroad should it see fit to do so. Original invoices and Inspectors' Certificates are to be submitted to the Managing Director; all return commissions and rebates of every description shall be credited to the Railway; and all purchases made by the Agents on behalf of the Railway shall be supported by manufacturers' original invoices and inspectors' certificates.

No commission shall be paid to the Agents except as above provided; but it is understood that the Railway Administration shall provide out of Railway funds for the remuneration of consulting engineers whenever their services are engaged.

With a view to the encouragement of Chinese industries, preference will be given, at equal prices and qualities, over British, German or other foreign goods, to Chinese materials and goods manufactured in China. No commission will be paid on purchases of such materials and goods.

It is understood and agreed that after the construction of the line is completed the Deutsch Asiatische Bank and the Chinese Central Railways Limited, within their respective sections, will be given the preference for such Agency business, during the currency of the loan, for the supply of foreign materials as the Railway Administration may require, on terms to be hereafter mutually agreed upon.

Article 19. Branch lines in connection with the Railway line mentioned in this agreement that may appear profitable or necessary later on shall be built by the Imperial Chinese Government with funds at their disposal from Chinese sources, and if foreign capital is required, preference will be given to the Syndicate.

Article 20. After payment of interest and repayment of principal of the loan for any current year, the Railway Administration will deposit with the Deutsch Asiatische Bank and the Hongkong and Shanghai Banking Corporation in Shanghai or Tientsin any surplus of the net revenue of the Railway line for that year up to the amount required to pay the following year's instalments of interest on the loan; the rate of interest on the deposit being arranged with the Banks from time to time with due regard to the conditions of the market.

Article 21. The Deutsch Asiatisch Bank and the Chinese Central Railways Limited may, subject to all their obligations under this Agreement, transfer or delegate all or any of their rights, powers and discretions thereunder to any German or British Company, Directors or Agents with powers of further transfer, and sub-delegation; such transfer, sub-transfer, delegation or sub-delegation to be subject to the approval of the Director General.

Article 22. This Agreement is signed under authority of an Imperial Edict dated the nineteenth day of the eighth month in the second year of Hsüan Tung, corresponding to the twenty second day of September, 1910, Western Calendar, which has been officially communicated to the Ministers of Great Britain and Germany in Peking by the Waiwupu.

Article 23. Five sets of this Agreement are executed in English and Chinese, three sets to be retained by the Imperial Chinese Government and two by the Syndicate.

In the event of any doubt arising regarding the interpretation of the contract, the English text shall rule.

Signed at Peking by the contracting parties this twenty fifth day of the eighth month of the second year of Hsüan Tung, corresponding to the twenty eighth day of September one thousand nine hundred and ten, Western Calendar.

For Deutsch Asiatische Bank,	Director General, Tientsin-Pukow Railway,
H. CORDES	HSÜ SHIH CHANG.
For the Chinese Central Railways Limited,	Assistant Director General, Tientsin-Pukow Railway,
S. F. MAYERS.	SHEN YUN PEI.

Seal of Director General
Tientsin-Pukow Railway

book will go out to the public with the stamp of approval of the "North China Daily News," the leading exponent of British opinion in the Far East, and will be quoted as an authority by those who have sublime faith in the infallibility of its Financial Editor. As his ideas will be generally accepted by other editors throughout the East, the following information about Dr. Sun Yat-sen's railway scheme will be illuminating, and we trust that in a spirit of fair play these facts will be given the same publicity as the many condemnations of his scheme.

DR. SUN YAT-SEN'S RAILWAY PROGRAMME

A DEFENCE

BY GEO. BRONSON REA.

When Dr. Sun Yat-sen was empowered in September, 1912, by President Yuan Shih-Kai to organize a national corporation or company for the financing and construction of future railways in China, wide spread publicity was given to his ideas, through the medium of several speeches whereby Dr. Sun hoped to awaken his countrymen to a full realization of what railways meant to the future prosperity and development of the country. At that period Dr. Sun held the view that it would be well nigh impossible to arouse enthusiasm amongst the people, by advocating the construction of a few thousand miles of trunk lines such as any tyro familiar with the needs of China could outline, so he deliberately traced on a large map an elaborate, comprehensive scheme embracing 60,000 miles of railways to illustrate his idea of what China actually required to take her place abreast of other countries where modern transportation had reached its highest development. Dr. Sun's so-called dream was nothing more or less than a prophetic vision of the lines which in the next fifty years China will be compelled to construct. His mistake consisted in giving publicity to his ideas without a full explanation of what he had in mind. These with his rather vague fancies of financing the lines, and the length of time they would take to construct, were outlined in various speeches for the benefit of Chinese audiences, and were given world-wide publicity through the foreign press associations. That foreign public opinion should unanimously agree in stamping him as a visionary and his scheme as impracticable was a foregone conclusion. The world smiled and refused to take him seriously. A mistake was undoubtedly committed in making no effort to counteract the prevailing idea at that time, but to do so would have necessitated the publication of important details, which might have brought about immediate failure of his plans owing to the delicate international political questions involved and the monopoly held by the Official Groups for railway loans to China. Since the time of his speeches in Northern China in September, 1912, the public has received no official or accurate information concerning the work of the Chinese National Railway Corporation, and the opinion then formed from Dr. Sun's incomplete exposition of his ideas for Chinese consumption, has for various good reasons been permitted to prevail without any attempt at correction.

When Dr. Sun arrived in Shanghai from Peking to put his plans into operation one of his first acts was to enlist the services of a competent adviser. There were several highly qualified British and European railway experts who aspired to the position, but Dr. Sun inclined to the belief that in the preliminary work of his organization he required the aid of one who had an intelligent grasp on the political problems connected with Chinese railways rather than a trained and experienced technical railway expert. He held that he needed some one who had a thorough knowledge of the trade routes and topography of the country, and whose advice would guide him aright in devising his final scheme, by steering him through the maze of international political pitfalls created by the many treaties, conventions and loan agreements through which China had parted with her rights. It was his earnest desire that his final program would be in strict accordance with rights already ceded to other parties, so that no international obstacles could be placed in the way of its success. He knew that his original scheme if officially presented to the world would embarass and compromise the President and the new Government, and he was animated by the most loyal and patriotic motives in trying to avoid any complications.

Passing over the high qualifications and merits of several well known foreign railway experts, Dr. Sun after consultation with many prominent Chinese invited me to join him as his adviser on these preliminary matters. I pointed out to Dr. Sun that I was not a railway engineer, and had no experience in the construction and operation of railways, and that my only qualification for such an honor was my knowledge of international politics as expressed in concessions and intrigues for control of China's railways. I warned Dr. Sun that my appointment would be adversely criticized by others having a more practical experience in the construction of Chinese railways. I therefore suggested that the title of Technical Secretary would be more in accord with the nature of the duties of the position, instead of the word adviser, which had lost considerable of its significance in China. This would leave the door open in the future for the employment of a proper technical expert as Adviser to the Company.

On assuming the position of Technical Secretary of the Chinese National Railway Corporation, Dr. Sun confided the revision of his original unwieldy railway scheme into my hands, and at my suggestion no authoritative information concerning the plans of the Corporation was allowed to leak out to the public from that date; the only parties entitled to such information being the higher officials of the Government at Peking. A comprehensive scheme for the construction of 10,000 miles of essential trunk lines was then designed, to be financed and constructed over a period of ten to fifteen years, calling for the expenditure of £100,000,000 or at the rate of £6,666,666 per year, a perfectly feasible and practical scheme for the financial markets of the world to assimilate.

As Dr. Sun found it impossible to leave China at that time to initiate negotiations for the financing of the lines, he requested me to undertake this mission and pave the way for him to come to Europe later on, and ratify and sign the final contracts. In order to successfully enter into negotiations, Dr. Sun appointed me as his Deputy, with a full power-of-attorney to act for him and the Corporation in arranging preliminary financial terms for the construction of the proposed system. It was left entirely to my discretion as to whether the scheme should be offered as a whole to an international combination of independent capitalists, to the Official Banking Groups, or whether it should be disintegrated, and separate contracts entered into for each line. The scheme as presented to the leading financiers in England, France and America met with their unqualified approval, and in France and America it was indorsed by members of the Official Banking Groups as the most practical plan yet presented for the solution of the intricate Chinese railway problem. The scheme could have easily been financed in its entirety, as negotiations could have been opened and preliminary agreements signed so that China would have been obligated to their final acceptance. Owing to certain political complications and the attitude of one of the official institutions who refused to relinquish certain perquisites connected with the departmental system of construction, I decided that another plan should be carried out in China by inviting the great construction firms to enter the field, feeling confident that with their experience and organization, they could build the railways more economically and expeditiously than individual engineers nominated by the Banks under the prevailing departmental system, where the Banks are the principals to the contract.

With this idea in view a contract was arranged with the greatest firm of railway constructors in the world, a firm who had already built thousands of miles of lines in other countries, whose credit and reputation for honest work was such that the building of all the Rhodesian lines had been entrusted to their care by the Rhodesian Government on a percentage basis without competition. The terms arranged with Messrs. Pauling & Company of London were most equitable and honorable to both sides, in fact, they are universally recognized by all disinterested financiers and engineers, as the most favorable financial and construction terms ever accorded to any Government for work of this nature. So favorable were they that I have been criticized by my intimate friends in other large financial and engineering firms for permitting such a precedent to be established, on the grounds that China was not entitled to such special consideration when all other Governments recognized a higher rate of profit to the contractor. I may go further and state that it is almost impossible to duplicate the terms in any future contract. The agreement with Messrs. Pauling & Company created an entirely new precedent for the construction of railways in China, and liberated the Chinese Government from the usual terms of the departmental system, by opening the door to an experienced railway construction firm who up to that time had been debarred from operating in China by the enforcement of the monopoly accorded the official banking groups for business of this nature.

All other Governments in the world are now carrying on important construction works on a percentage basis with reputable engineering firms, in fact under certain given conditions a percentage or cost plus a fixed sum contract is the only feasible method to get the work financed and started. The system has been found good for the most enlightened Governments in the world, and from my own knowledge and experience as a contracting engineer for public and other works, I had no hesitation in assuming the responsibility for employing it in the construction of Chinese railways, especially as no survey had been made or could be made with in the time and funds at the disposal of the Corporation.

Whether I was right or wrong in this decision is purely a matter of opinion. My judgment on this point is as good as that of any railway engineer in China, and I have the experience of other Governments to justify my action. The only opposition to its adoption in China arises from interested and prejudiced parties who prefer to fasten the departmental system on a weak Government, so certain practices and perquisites can be perpetuated. The essentials to the faithful performance of a percentage contract are an honest and experienced contractor of high financial standing, and honest supervision on the part of those appointed to protect the Government's interests. Given a reliable, honorable and competent contractor with an established reputation, and an honest official to guard the interests of the Government, the percentage or cost plus a fixed sum contract are the most equitable manner of carrying on large public works where it is impossible to make an accurate estimate at the time of entering into the contract. If the Government objects to such a contract, it simply indicates distrust in the integrity of its own officials, and merely adds further ammunition for bankers to insist on more stringent terms in supervising the expenditure of loan funds. "Cost plus a fixed sum" is undoubtedly the best arrangement, but with honorable contractors and faithful inspectors representing the other side, the percentage system is as equitable in the end. The legitimate, recognized percentage of profit allowed by all European and American Governments on large public works is invariably ten per cent. over the actual cost of construction. I can cite several such contracts being actually carried out for various Governments throughout the world. Messrs. Pauling & Company were willing to undertake the work in China on a basis of seven per cent. profit over the actual cost of construction, or three per cent. under the standard rate other Governments consider as fair and reasonable. The financial terms were also one half of one per cent. better than the last Chinese railway loan. The Agreement for the Canton-Chungking line speaks for itself. As Dr. Sun could not personally visit London to arrange the details and sign the agreement, at my suggestion it was arranged that Lord French, the representative of Pauling & Company in China, should proceed to Shanghai and negotiate the details directly with Dr. Sun. While these meetings were taking place, other negotiations with well known and experienced contractors and financiers were initiated in London and Paris on the same favorable terms as the contract with Pauling & Company. Being desirous that Dr. Sun should have all the honor and prestige arising from the success of his plans, I refrained from definitely compromising him with other parties until the Pauling contract with all its details was formally signed, so it could serve as a precedent and guide to others. I was also very anxious that Dr. Sun should leave China and come to Europe to conclude the other contracts on the ground, so he could personally reap all the credit and honor that belonged rightfully to him as head of the Corporation and originator of the scheme. My one regret is that I permitted the transfer of the Pauling negotiations from London to Shanghai instead of urging Dr. Sun to come to London, as then he would never been have actively inplicated in the rebellion which destroyed his usefulness. The contract for the financing and construction of the Canton-Chungking Railway was signed at Shanghai on July 4th, 1913 between Lord ffrench and Dr. Sun, or within a month after Lord ffrench arrived in Shanghai from Peking. Copies of the contract were due to arrive in London by the Siberian mail on the 20th of July, when active negotiations could proceed with the other parties who had already accepted the basic terms. On the 18th of July, the rebellion against President Yuan was commenced, and two days later Dr. Sun's powers as Director General of the Chinese National Railway Corporation were annulled by the President in a special mandate, thus bringing to an abrupt termination all further negotiations in Europe.

From that time to this not one word about Dr. Sun or his railway plans has been conveyed to the public by any one formerly connected with him, nor has the Government itself made any public statement. This silence is due to the fact that absolutely nothing was known about what had been accomplished. Dr. Sun's papers and records were removed from his office before his flight to Japan, and his Chinese assistants and staff have been deterred from saying anything in defense of his railway scheme for fear of being misinterpreted and implicated in the abortive rebellion against the President. If the Government knew anything about his railway plans it very wisely refrained from making public any information that might reflect credit on a man proscribed as a political outlaw. Of Dr. Sun's political schemes and dreams, I know nothing. I do know however that during my connection with him as the Technical Secretary or Adviser to the Chinese National Railway Corporation, and as the Deputy Director General holding his Power of Attorney, nothing but the highest and most honorable patriotic motives and complete devotion to the best interests of his country characterized his labors for the perfection of a practical railway scheme for China. Up to the time of my departure from China on the special mission, Dr. Sun would listen to no criticism of the President from his subordinates in the Corporation. He trusted him implicitly, and I personally know that when appealed to from all parts of the country to permit his name to be used as a candidate for the Presidency in the coming elections, Dr. Sun worked in his home until early morning hours writing letters to his friends and adherents advising them to support Yuan Shih-kai for the Presidency. Dr. Sun's parting and private instructions to me were emphatic in that he did not desire one cent set aside as commission for himself or the Corporation in any negotiations I might initiate. He desired that the lowest possible terms should be secured for the country, and he confided in my honor and integrity to protect his reputation from any taint or suspicion of graft or illegal commissions. In other words he placed his reputation in my keeping.

As I have already remarked I know absolutely nothing of Dr. Sun's political plans. I was never taken into his confidence on these matters, nor did I ever discuss politics with him. I questioned him once on the stories about his relations with the President, and he assured me that he had the highest confidence in President Yuan and that the most cordial relations existed between them. And at that time this was true. Once only did I venture to intrude my ideas and advise him on Chinese political matters. In a letter written from London I urged him to lay aside all party differences, and go to Peking and co-operate with President Yuan by accepting the position of

Premier or any cabinet post, where he could control the Kuo Ming Tang element of Parliament who were obstructing the organization of the Government and compelling the President to take the reins in his own hands as the only way to extricate the country from its critical position. I pointed out that such a step on his part would harmoniously unite North and South, restore confidence and contribute to the rapid reconstruction of the country. The practical experience he would gain in active administrative and legislative work in Peking would strengthen his position and grasp on public affairs, and pave the way to greater usefulness in the future. I have since learned that Dr. Sun approved of my advice and decided to act on it. At a secret political meeting this matter was fully discussed and received the indorsement of most of the leaders present. I am informed however that one of the members in a passionate tirade against the President, obstinately opposed such a step and Dr. Sun's good resolutions were voted down on purely party grounds.

As to Dr. Sun's railway scheme I was fully informed, for whatever plans he had, and whatever was done to further them, had been outlined and carried out by myself. I am responsible for his scheme, and the financial negotiations in London, Paris and New York. My personal work along these lines reflected on him as my principal, and his personal reputation as an honorable official depended on my integrity. From the time I left Shanghai in January, 1913, until his powers were annulled on July 18th, Dr. Sun confided the preliminary negotiations to my discretion, and never once during this time did he write me a letter of instruction or hamper my freedom of action with any suggestions, or question the wisdom of my plans. He was guided entirely by my few cablegrams and acted promptly and in accordance with all my recommendations. In other words Dr. Sun placed the utmost confidence in my ability and integrity, and stood to succeed or fail on my judgment and the outcome of my mission abroad. I would point out that with one single exception, where Dr. Sun signed an agreement on the eve of his flight from Shanghai at the time of the rebellion, there were no compromises or complications left for the Central Government to assume. The Canton-Chungking Railway Agreement was signed while Dr. Sun was in full possession of his powers, and was therefore valid and legal, and recognized as such by the British and Chinese Governments. When his powers were annulled, the other negotiations initiated in London and Paris were amicably terminated, with a clear mind and clean hands and with no fear of future compromises for the Government at Peking or for myself. My work in Europe is open to the fullest investigation and scrutiny. The record is clean and honorable, characterized by a firm defense of China's rights and a recognition of equal opportunity for other nations interested in China.

With this exposition of facts it becomes evident that my personal reputation is involved in any final judgment on Dr. Sun's railway scheme. For the last eighteen months I have been unable to protect myself against hostile criticisms, falsehoods and insinuations directed against Dr. Sun and his railway scheme, owing to the fact that the Ministry of Communications confirmed the appointment I held under Dr. Sun, and entrusted me with further matters connected with the development of railways in China. As this official connection is now terminated I am free to answer any and all attacks and insinuations against Dr. Sun's railway program, and the financial arrangements entrusted to my care.

I hold no brief for Dr. Sun Yat-sen and his political propaganda. I cannot defend his intrigues and open rebellion against the Government, but in the very nature of things I am compelled to take notice of reflections on his railway scheme and the financial negotiations and diplomatic conversations abroad in which I was the principal figure. Dr. Sun may have conducted negotiations with others without my knowledge. Of his negotiations in Japan, I cannot speak with authority. Of all such matters I know nothing, as I never received a letter from him while I was abroad. It is hardly probable however that any serious negotiations could have taken place with reputable financiers, without my hearing of them in Europe. (I mention this because it has been insinuated that my mission in Europe was to raise funds for the rebellion through the sale of railway concessions and contracts) The one contract negotiated, speaks for itself. I am willing to be judged by that. The fact that no other compromises resulting from my work have been brought to light in eighteen months is sufficient proof of the absurdity of such stories. If any money had been advanced on a railway contract, the contract would have been forthcoming by this time, and demands made on the Government for its recognition. Such stories are not only a reflection on my own conduct, but imply that there are still gullible financiers ready to part with hard cash on such unbusiness like propositions.

Honest criticism of the scheme itself, or a frank discussion on the advantages or disadvantages of the contract system of construction are legitimate and welcome, as this involves merely a matter of opinion, but malicious, mendacious and at times libellous references to Dr. Sun and myself cannot be permitted to pass unnoticed. If these attacks were inspired by a knowledge of the scheme or what had actually been accomplished, they might be justified in part, but as the authors are absolutely ignorant of many facts, it becomes evident they are acting unjustly in abusing a political refugee who cannot defend himself, and ignore the fact that a foreigner was practically directing the scheme and its financing abroad. I owe it therefore not only to Dr Sun but to myself and other Americans who may be called upon in the future to co-operate with the Chinese, to inform the public of the real facts connected with Dr. Sun Yat-sen's railway scheme and my personal connection with it. To this end I hope in the near future to publish in the columns of THE FAR EASTERN REVIEW and in permanent book form the history of the Chinese National Railway Corporation and its work for the advancement of China's prosperity through the development of railways. I have no intention of wounding the sensibilities of the present Government at Peking, who hold the name of Dr. Sun as anathema. Dr. Sun's political intrigues and his railway schemes were two distinct and separate things. Dr. Sun is open to severe condemnation for permitting himself to be led into open hostility against the Government at a time when the reconstruction of the country, and the consolidation of power was imperative to save China from her enemies, at home and abroad. But after all, Dr. Sun was a Chinese official, placed in control of the greatest single development scheme ever conceived for placing China on her feet. The reputation of one high official reflects on all. If the stories of graft and corruption against Dr. Sun as the head of the Chinese National Railway Corporation are permitted to pass unchallenged, it is not Dr. Sun who will suffer, but the reputation of China itself. If Dr. Sun was honorable and upright in his financial transactions for the construction of railways, the world is entitled to know of it, as it will go a long way towards strengthening confidence in the general integrity of China's officials, and assist the Government in future negotiations. The financiers of Europe and America *know* that Dr. Sun's record was clean in the transactions of the Chinese National Railway Corporation, and it was due to the confidence and trust then created, which permitted the Government to secure immediate attention to a similar scheme when proposed a year later. Because Dr. Sun was weak and allowed himself to be inveigled into a rebellion against the President, does not justify attacks on his railway plans. A political murderer may be an honest man in business matters.

A sample of the unjust attacks on my personal work and character, appeared in a leading editorial in the "Shanghai Mercury" of April 1st last, when I was in London, and could not at the time readily defend myself owing to my official connection with the Ministry of Communications. In an unseemly haste to laud the merits of a British aspirant for the position of Railway Adviser at Peking, the editor of the Mercury could not resist the opportunity of discrediting my personal work, thus laying itself open to prosecution for libel, by the publication of a deliberate falsehood calculated to reflect on the honor and usefulness of myself. The writer of the editorial overreached himself in this particular instance as by its reflections on the Ministry it destroyed the last hope of Mr. Pope's appointment as Railway Adviser. Mr. Pope subsequentiy apologized to me in London for the editorial and assured me on his honor that he had absolutely nothing to do with its publication. As an interesting side light on the means employed to undermine the reputation and usefulness of an American in the employ of the Chinese Government, the editorial is herewith reprinted:—

MR. POPE'S APPOINTMENT.

We had the pleasure on Monday evening of being the first to announce the transfer of Mr. POPE to Peking, and though it was not then clear to what post he was to be appointed it was quite certain that it would be to some office in which his services would be of even greater and wider importance than they have been during the tenure of his office in Shanghai. The appointment is one to be welcomed from every point of view except that of Shanghai, which will miss his genial presence and his unfailing interest in local and especially philanthropic affairs. As far as the work of the Shanghai-Nanking Railway is concerned it will doubtless be maintained at its present high level by Mr. CLEAR, who is appointed Mr. POPE'S successor, and it may be that Mr. POPE'S appointment will enable him to move Peking to absorb a certain further degree of wisdom with regard to the development of the S.N.R. than Peking has been able to assimilate up to the present.

Apart from all personal consideration, however, the appointment is a welcome and a healthy sign of the times. In the early days of last December, it will be remembered, the Ministry of Communications published an advertisement which invited all and sundry to compete for a substantial prize of some thousands of dollars. The competitors were to send in within a month a scheme for railways throughout China, with maps and plans, and with full details of gauge, costs, and like matters, reasons why each line should be built, an estimate of the strategic, commercial and other values of each line, and a host of other interesting details. The advertisement made the Board of Communications the laughing-stock of the Far East, and the only sane conclusion that anybody who read it could come to was that either some underling in the Board had gone crazy or that somebody outside the Board was having an expensive joke. **That was the first impression, but within twenty-four hours Peking knew what was the underlying motive and purpose of the apparent folly. It was realized that the requirements of the advertisement could not be met except by somebody already thoroughly well posted up and with practically every detail ready for delivery; it was further realized that the preparation of such material as was required could only be undertaken with access to the fullest information, much of which was only to be found in Government dossiers; and it was not long before Peking grasped the fact that such information had all been carefully compiled and collected and systematized and organized by Dr. Sun's Railway Bureau. The conclusion was obvious: this advertisement had almost certainly been published by the Board of Communications, at the instance of somebody who had been in the employ of Dr. Sun, and had all the required information ready to hand. The short time allowed for the competition would enable some such residuary legatee of Dr. Sun to pass in his papers and secure not only the coveted prize, but also, possibly, the appointment of advisor to the Board of Communications. The appointment of Mr. Pope sets the seal on the final failure of that intrigue, and not only China but all interested in Chinese railway development may well feel thankful at the present announcement. The Board of Communications is most deserving of congratulation, for it has the double joy of knowing that it has secured a good advisor and has also rid itself of a widespread organized attempt to bring it under influences not by any means wholesome.**

Mr. POPE'S task will not be an easy one. Whilst some of China's railways are doing well, others are doing ill; whilst some are well organized, others are not organized at all. There is little co-operation between them. The prolonged negotiations for through booking between the Shanghai-Nanking Railway, the Tsin-Pu Railway and the Peking-Mukden Railway revealed the dire need of expert and independent advice and guidance in the Board. **The waste of time and energy that have been brought about by bringing an accountant from the United States to examine the various railway accounts in order to decide whether train oil were to be counted against upkeep of wheels or of axles, is another illustration. With a competent advisor in the Board it would have been easily possible to call a conference of, say, the three leading accountants, and these could have drafted a uniform method of accountancy. They would have done it in a little over a week, and at practically no cost to the Board.** These are examples in one direction of how such an appointment as that of Mr. POPE can be made readily effective for China's good. When he turns to other questions a big task lies before him. Half the railways in China are packed with "dead-heads," drawing "dry salary." These are the appointees, not of the managers of the railways, but of Tom, Dick and Harry in the Board of Communications itself. It will be a difficult, but doubtless an agreeable, task for Mr. POPE to get rid of these burdens on the railway development of the country. There are other problems just as serious to be tackled, and no doubt Mr. POPE will tackle them as far as lies in his power.

But there is the crux of the matter—"as far as lies in his power." The Board of Communications will simply stultify itself if it does not give Mr. POPE real power and authority, and does not accept his advice. If the Board only wants a figurehead, it might just as well have taken any schemer that came along, because it need not have taken his advice. Knowing Mr. POPE'S character, we hope that the Board is cherishing no illusions. Mr. POPE is not likely to allow himself to become a figurehead merely. He will want to get something done; and we hope he will succeed.

The reference to myself is obvious to any one at all conversant with my work and movements. I was in Peking at the time the advertisement mentioned was printed in the native newspapers. The facts surrounding this rather remarkable announcement are still somewhat obscure. I may state that the various schemes submitted a year ago in answer to the advertisement of the Ministry, are still in the hands of an official appointed to pass on their merits, and no awards or decisions have yet been announced. It might interest the editor of the "Mercury" to know that a work in the French language on the "Railways of China," or a "Programme for their Development," was recently published at Peking, by A. J. H. Charignon, Technical Adviser of the Ministry of Communications. I merely mention this to invite the attention of the editor of the "Mercury" to the fact that I have had a similar work in preparation for some months, but have withheld its publication, until official action was taken on the competitive schemes already filed with the Ministry, so it would be possible for me, as the proprietor of The FAR EASTERN REVIEW, to render due credit to the successful competitor. Does the editor of the "Mercury" desire to be fair and just? Would he care to insinuate that M. Charignon in his capacity as Technical Adviser to the Ministry of Communications with access to the dossiers and the competitive schemes, has forstalled other competitors by publishing a program for the future development of China's railways? It is a fact that I personally submitted a scheme for a national system of railways, with a full exposition of the various lines from the strategic, political and commercial viewpoint, together with over a dozen large maps, but as it was in connection with an entirely different matter, I expressly stipulated that it should be considered as a departmental document, and in no event should it be entered in the public competition. After my resignation from the Ministry of Communications in September last, I was requested by an official of the Ministry to permit my scheme to enter the competition, and I then consented. M. Charignon's is the French Technical Adviser to the Ministry of Communications, and undoubtedly has access to the dossiers the editor of the "Mercury" refers to. The schemes submitted for competition over a year ago have not been passed on as yet, and in all probability never will be. It is certainly a fair question to ask what right had any foreign official of the Ministry to publish a work on a national scheme for the development of railways for China, when various competitive schemes have been in the possession of the Min istry for nearly a year, without action being taken on them. I have no desire to pass any reflection on M. Charignon's work. But, owing to his official position there is a question of ethics involved in the publication of his book, which if violated by an American, would have resulted in his being hounded from the Ministry by ever ready critics who lay awake at nights devising schemes to destroy the usefulness of every American in any Chinese Government position which bars the way to the successful prosecution of other national designs on Chinese railways.

It is only necessary to read the gratuitous and uncalled for slur on Dr. Adams and his work for the Unification of China's Railway Accounts, to grasp the fact that the attack is not a personal one, but part of a general policy to bring discredit on any American who has the presumption to interfere with the well laid plans of others for the domination of China's railway policy. For the Chinese Government to invite the services of the expert who had brought order out of the chaos surrounding American railway accounts, and whose ability is recognized all over the world, and who holds an honorable position on the Interstate Commerce Commission of the United States, rather than entrust this important task to Mr. Pope, was keenly resented by the "Mercury" and the interests it represents. Any American who dares to presume that he has any knowledge of China's railways or interferes with the set plans of others, is a participant in the alleged "*widespread organized attempt to bring Chinese railways under influences not at all wholesome.*" This remark is simply rank impertinence and a cowardly national libel on Americans. However, there is one American who has full and exact information as to the aims and policies of others, and who will take great care in the future to give the widest publicity to all designs on China's liberty of action in the control of her railways.

And now comes Mr. Srinivas R. Wagel, the Financial Editor of the "North-China Daily News," to heap further contumely on Dr. Sun Yat-sen and his railway program. "It is useless to refer in detail to Dr. Sun Yat-sen's schemes," says Mr. Srinivas R. Wagel; "his schemes were neither practicable, nor as later events proved, was it his intention to go on with the development of railways." "Very little was done by Dr. Sun Yat-sen and it

is very doubtful if he did anything in the way of promoting railways at all." Just as if Mr. Srinivas R. Wagel knew anything at all about the subject! What he did know was deliberately suppressed and no reference made to the fact that the one contract Dr. Sun did conclude went to the most reputable British railway construction firm.

AMERICAN COMMERCIAL ATTACHE FOR CHINA

MR. JULIAN H. ARNOLD

On July 15th, ult., the American Congress, acting upon the earnest recommendation of the Hon. William C. Redfield, granted an appropriation of $100,000 for "*Commercial Attaches,* to be appointed by the Secretary of Commerce, after examination to be held under his direction to determine their competency, and to be accredited through the State Department, whose duties shall be to investigate and report upon such conditions in the manufacturing industries and trade of foreign countries as may be of interest to the United States, and for one clerk to each of said commercial attaches to be paid a salary not to exceed $1,500 each; and for

Mr. Julian H. Arnold.

Promoted from the post of American Consul General at Hankow, to the newly created position of Commercial Attache at Peking.

necessary traveling expenses, rent, purchase of reports, travel to and from the United States, and all other necessary expenses not included in the foregoing. Such commercial attaches shall serve directly under the Secretary of Commerce and shall report directly to him."

As the appropriation was finally authorized, the Secretary of Commerce was charged with the duty of directing the examination of candidates, and he promptly approved a plan under which, through the cordial co-operation of the Civil Service Commission, those who seemed to possess the required training and the qualifications sought for were invited to present themselves in the various district centers where the Commission maintains examining boards, and undergo a written test, for which a rating of 50% in 100 was fixed.

This written examination involved the preparation of the candidate of several theses on subjects closely related to the work which is expected of the commercial attache when at his post. Methods of developing export trade, the difficulties of this commerce, banking conditions, the political history of foreign countries and similar subjects constituted a test of the range of the candidate's information and his readiness and originality of thought. He was also asked to write 500 words in French, German or Spanish.

Such of those who passed the written examination above the grade of 70%, and whose general record of education and experience seemed to justify further consideration for appointment, were then invited to appear before a committee composed of officers of the Bureau of Foreign and Domestic Commerce, the Civil Service Commission, and the Department of State. Under an oral examination in which the ability of the candidate to speak readily one of the foreign languages required was tested, his personality and other similar qualifications were rated, to form the remaining possible 50% of his marking.

As a result of this method of selection, six commercial attaches have already been appointed. Two consular officers, long in that service, with admirable records in trade promotion work, have been appointed by transfer from the Department of State, and one selection was made by similar transfer in the Department of Commerce.

The primary duty of the Commercial Attache is to learn to know thoroughly the country to which he is accredited. He is to know not only the capital or chief port but the back country and its small cities. He is to meet and learn the views of all classes of men, officials as well as business men, rich as well as poor, educated and the unthinking. Much of the information which he acquires will be merely educational, it will merely form the background for specialized studies. The entire mass of accumulated data will be placed at the disposal of the officers of the Government and of the business men of the country.

To attempt a detailed analysis of the functions of the Commercial Attache at this time would be valueless. In a general way, it is expected that he will act as the personal representative of the Department of Commerce, and hence, of the American business public, in his district. The Commercial Attache is the business diplomat.

He will report on trade and financial conditions generally. He will report on definite and specific opportunities for American manufactured goods. He will answer inquiries from American merchants and manufacturers, and from foreign merchants and manufacturers. He will seek out new markets for American products, and will bring them, through the Department of Commerce, to the attention of the American business public. He will study and recommend methods of increasing the trade relations between the United States and his particular district.

Nine appointments have been made under the new law. London, Paris, Berlin, Petrograd, Rio Janeiro, Buenos Aires, Lima, Santiago de Chile, and Peking have been selected as the most important posts to be covered, and the men assigned for service are fitted by past experience and special qualifications. It is particularly gratifying to see that the Secretary of Commerce has recognized the undoubted ability of Consul-General Julian H. Arnold, of Hankow, by appointing him as Commercial Attache at Peking. Mr. Arnold's reports on the trade conditions of the various ports in the Far East, where he has served as Consul or Consul-General, have been marked by a clear insight into commercial matters. We have followed his career year by year since 1904, when THE FAR EASTERN REVIEW was first published, and have reprinted many of his reports. His work in promoting American trade in China has been admirable and he fully merits the promotion conferred on him. Mr. Arnold entered the Consular service in 1902, as a student interpreter. He speaks Chinese fluently, and has travelled in all parts of China on special commercial studies. He has been stationed at Tamsui, Formosa, Dalny, Foochow, Shanghai, Chefoo and Hankow.

lines, permission must first be requested from the Governor of Shantung, that he may investigate the matter.

ART. 14. All section men appointed by the Company within the limits of Shantung Province must be provided with passports sealed by the officials of both countries. This is to assist the local officials in giving protection. Without such passport they can not assume the responsibility of protection.

ART. 15. All Chinese or Germans employed by the Company must be supplied with special certificates to that effect; sealed both by the local officials and the Company. This will facilitate the detection of imposters. When the road is being laid out, as well as when it is being constructed, it will be the duty of the Chinese officials to appoint men section by section, to accompany and assist (the railway employees) in looking after their things—such as wooden stakes, etc. Should any falsely assert himself to be in the employ of the Company, he shall be arrested and punished by the local officials.

ART. 16. Should it ever happen that it becomes necessary for soldiers to protect the railway outside of the 100 li zone (Kiao-chow concession) the Governor of Shantung shall detail such soldiers, and foreign soldiers can not be used. The Governor of Shantung having consented to use his utmost endeavors to protect the railway both in time of construction and operation, he must see to it that the railway receives no injury from bandits.

ART. 17. The object of constructing this line is solely the development of commerce, and it will not be permissible to transport foreign soldiers or munitions used by foreign soldiers to any place outside of the 100 li zone. If by any chance, the peaceful relations existing between China and any foreign Power become broken, the railway will still remain under the management of the Company, but the company must still observe the above rule. But if the offices are seized by an enemy, and the Company loses its control, then this Province will no longer assume the responsibility of protecting the line.

ART. 18. Should the Province be visited by famine or flood, so that it is necessary to send relief to the sufferers in the form of rice or clothes; or should there be any riot necessitating the use of soldiers, such soldiers (with their arms, provisions, and baggage) and such relief (as mentioned above) must be shipped at reduced rates according to such regulations as Germany has in her own country.

ART. 19. The Company must make satisfactory arrangements for the easy collection and receipt along its line, of such likin and Customs duties as are collectible in the Province on merchandise and domestic animals. As to the erection of Custom Houses, etc., the Customs officials of this Province will first discuss with the Company the amount to be expended, after which that matter will be taken up.

ART. 20. In the construction of the railway, the Company must employ among their men, people who live in the various villages along the line: and the Company shall also trade with them, that they may not be left out in the cold as it were.

ART. 21. All Chinese employed by the Company outside the German concession shall, if they break the law, be tried by the high local officials; and when a local official notifies the Company that according to Chinese law, a certain man should be tried as an offender, said offender shall not be given improper protection, or be in any way screened by the Company. If there be any offenders or law-breakers among the foreigners employed, and action be brought against them, they shall be tried by foreign law, and it will be the duty of the Company to make a thorough investigation of the case, and not show undue favor.

ART. 22. Competent men must be picked for work on the road, and natives of the place must be used as far as possible. Moreover, the price to be paid for labor must depend upon the various conditions of the place. If the laborers get into quarrels with the people, it will be the duty of the Chinese officials to arrest them and deal with them according to the law.

ART. 23. After the completion of the road, special men shall be detailed to watch and repair the line. Old residents in the various respective districts—men who have considerable means—shall be intrusted with the hiring of these men, in order to guarantee that the men who are hired will all be peaceful and reliable characters. Moreover, those who are intrusted with the hiring of the men must obtain from the local officials certificates for the men they hire. This is for convenience in investigation.

ART. 24. After all work in connection with the railway is completed and the road is being operated according to regulation, should there be any accident resulting in the injuring of any Chinese or damaging their property, the Company must repay them for their losses according to the conditions. At all times notices must be conspicuously placed. Damages must be paid also for all losses or injury to life or property caused by error or carelessness in the handling of the trains. Before the road is entirely completed, and when trains are running according to temporary schedule, this rule that damages must be paid for all losses or injury to life and property caused by error or carelessness in the handling of the trains, likewise holds good.

ART. 25. If there ever be any dangerous places in this province, such as flooded districts, fallen trestles, or damaged bridges, interfering with the operation of the railway, then these obstructions must be removed before the road can be operated again according to regulation.

ART. 26. If at any time, whether it be when the road is being located, constructed, or operated, the Company for some reason requests the Governor of Shantung to furnish soldiers for protection, it shall be his duty to investigate the matter immediately and grant the request, sending sufficient guards of soldiers to the place where they are needed. As to the amount of extra money which the Company shall pay such guards, this will be considered apart.

ART. 27. The title of and authority over all railroad lands outside the German concession, so far as they rested in the former owner originally, will revert from him to the Governor of Shantung. Title to, and authority over, the railroad lands within the German concession will revert to the German Governor.

ART. 28. The Chinese Government shall have the right to buy back this railroad in the future, but as to this matter, it will be considered separately later.

After the above articles have been adopted, signed, and sealed, they shall be sent to the Department and District officials, as well as to the various railway officials, that all may become familiar with them and act accordingly. Hereafter, if any alterations or additions are deemed necessary, they can be made only by consultation of the Governor of Shantung, or such competent and experienced officer as he may appoint, and the Company.

(Sgd.) YIN-CH'ANG,
Manager of Railway and Mining Affairs, etc., etc., etc.,
YUAN (SHIH-K'AI),
Vice-President Board of War, Governor of Shantung, etc., etc., etc.

Kuanghsu, XXVIth Year, Second Moon, 21st Day. March 21st, 1900.
(Signed on the part of the Chino-German Co. by Schmidt and Michaelis.)

BRITISH AND GERMAN AGREEMENT RE RAILWAY CONSTRUCTION IN CHINA

Minutes of Meeting held at New Court, St. Swithen's Lane, London, on the 1st and 2nd September, 1898.

Present:—Representing the German Syndicate—M.A. von Hansemann. Representing the British and Chinese Corporation, Ltd.—Mr. W. Keswick. Representing the Hongkong and Shanghai Banking Corporation—Mr. Ewen Cameron, Mr. Julius Brussel.

M. VON HANSEMANN proposed the following:—"It is desirable for the British and German Governments to agree about the sphere of interest of the two countries regarding the railway constructions in China, and to mutually support the interest of either country." This proposal was agreed to.

The following proposal of M. von Hansemann regarding the British and German spheres of interest for applications for Railway Concessions in China, viz.

"1.—British sphere of interest, viz.—The Yangtsze Valley, subject to the connection of the Shantung lines to the Yangtsze at Chinkiang: the provinces south of the Yangtsze; the province of Shansi with connection to the Peking-Hankow line at a point south of Chengting and a connecting line to the Yangtsze Valley, crossing the Hoangho Valley.

"2.—German sphere of interest, viz.—The province of Shantung and the Hoangho Valley with connection to Tientsin and Chengting, or other point of the Peking-Hankow line, in the south with connection to the Yangtsze at Chinkiang or Nanking. The Hoangho Valley is understood to be subject to the connecting lines in Shansi forming part of the British sphere of interest, and to the connecting line to the Yangtsze Valley, also belonging to the said sphere of interest."

Was agreed to with the following alterations, viz.—"The line from Tientsin to Tsinan, or another point of the northern frontier of the Province of Shantung, and the line from the southern point of the province of Shantung to Chinkiang to be constructed by the Anglo-German Syndicate (meaning the German Syndicate on the one part, and the Hongkong and Shanghai Banking Corporation and the British and Chinese Corporation, Limited, on the other part in the following manner, viz.—

"1—The capital for both lines to be raised jointly.

"2—The line from Tientsin or to Tsinan or another point on the northern frontier of the Province of Shantung to be built and equipped and worked by the German group.

"3—The line from the southern point of the province of Shantung to Chinkiang to be built and equipped and worked by the English Group.

"4—On completion the lines to be worked for joint account." So far the minutes of the proceedings of the meetings, and it is further agreed upon that neither the German Group nor the English Group will be bound to construct the lines assigned to their sphere unless the Shantung lines be constructed simultaneously.

Signed London, September 2, 1898.

Approved of and signed by A. VON HANSEMANN, W. KESWICK, EWEN CAMERON, JULIUS BRUSSEL.

private corporation of planters? The farmers secure their legitimate profit from the sale of cane to the mill for fifty per cent of the product; a fair proportion. If they are honest and sincere, and willing to give the necessary bond for the continuous supply of cane, private capital would undertake the erection of the central plant without Government guarantee. As the Filipino planter refuses to abide by conditions accepted as indispensable in all other cane producing countries, and will not sign an acceptable security to abide by his contract to deliver cane to the central factory, he now turns to the Government to assume this responsibility for him, and in addition, asks the Government to hand over the mill to him when it is paid for. Why should the Government guarantee be employed to create a property worth at least $500,000 Gold, which ought to pay for itself in five years, and then hand it over to a combination of planters who have already received their legitimate profits from the sale of the raw product?

If the Government guarantee is extended to cover such a scheme, there is no reason why the Government should not remain in possession of the property, when paid for. The planters have contributed no funds, and are certainly not entitled to special favor from the Government. The precedent that Assemblyman Reyes of the Philippines would create, by the passage of his bill, savors strongly of "graft"

Or it may be taken as the Filipino solution of the guarantee problem for the erection of a central factory. They refuse to entertain any proposition for the faithful performance of their contract, but say in effect, we will not consent to any scheme which embraces our lands as a guarantee for the erection of a central, so the only way is for us to own the central. Bribe us to be honest. Make us a present of the central factory after it is paid for, then we will have some real incentive to live up to our obligation to furnish it with the cane our contract calls for. The Government will guarantee to outside capital that which we individually refuse to give; we will receive our legitimate profit from the sale of the cane to the mill, and then when it is paid for, the benevolent Government will hand over the property to us. It's a brilliant scheme—for the planters, and their legislative partners.

G. B. R.

ENGINEERING IN CHINA

EXTRACTS FROM THE ADDRESS OF MR. A. C. CLEAR, PRESIDENT OF THE ENGINEERING SOCIETY OF CHINA

The inaugural address of President A. C. Clear in taking the chair for his second term as head of the Engineering Society of China was marked by a deep and sympathetic insight into the development problems of China as a whole, and of Shanghai as its great commercial port of entry. Mr. Clear very briefly and ably summarized the engineering progress of the year, and the needs of Shanghai as a growing metropolis, and, in conclusion dwelt on a theme worthy of the deepest consideration on the part of Chinese officials and capitalists interested in engineering development. In the closing words of his address, Mr. Clear suggested a line of thought which if followed up, might prove of inestimable value to the country. Mr. Clear said:—

"I would remind you that we, Engineers, are the men upon whom the brunt of the actual work of development will fall, and when in the numerous proposals that spring up mushroom-like over the length and breadth of this great country, we see any real sign or hope of progress it is our duty not to submit these to that easiest of all, destructive criticism, but accept the harder task of selecting those proposals which are substantial and good, using all the influence we can command to construct from these something that will be of general benefit not only to this country but to the whole world.

"The world is now so closely bound with ties of easy inter-communication that the development of one country is bound to react on others. One of China's needs is to have an independent body of expert opinion to which important technical matters could be referred. Why should we not eventually supply this? In our International character lies the strength of any opinions advanced by us. Our steadily increasing membership of responsible engineers is a convincing proof of the value of the work being done and of the status of this society, whose animating principles are those of the great engineering institutions throughout the world, viz., the general advancement of the science and practice of engineering in all its branches."

If such an idea could be carried into practical effect, without fear of international jealousies or private commercial considerations cropping up from time to time, many problems now confronting China might be amicably adjusted with due regard to the interests of all countries. If a committee of this Society composed of broad minded engineers of various nationalities, could be selected to pass opinions on some of the knotty points continually arising, a better feeling might be engendered. We have in mind the propaganda of a very important association whose declared aim is to displace American and German technical and engineering advisers to the Chinese Government by those who will work for the attainment of the chief object of the Association. An analysis of its official literature indicates that the desired object is to have British engineering standards and specifications adopted officially by the Chinese Government. In other words Americans and Germans are to be ousted in favor of those who will advance the special objects of one national association. The propaganda has the stamp of official approval. The code of ethics governing the work of engineering societies the world over call for honorable and disinterested technical advice from any of the members employed in a consulting capacity. If the Chinese Government employs only engineering advisers who owe their position to the influence of one association, it goes without saying that the aspirant to the post will not receive its support unless he is in thorough accord and sympathy with the aims of the association, and pledges himself to further its propaganda.

In such matters the Engineering Society of China could materially advance the cause of China, and uphold the ethics of the profession by giving disinterested advice not only to the Chinese, but to those national associations at home who overlook the finer points of professional ethics. We have not the space to devote to a thorough exposition of this subject at this time, but hope to be able to present it in full at an early date.

Mr. Clear's able resume of China's engineering projects, unfortunately did not cover all the important works originated during the year, but was confined largely to those having a special bearing on the development of Shanghai. A high tribute was paid by him to the American engineers who conducted the recent survey of the Hwai River district for the American Red Cross Society. In this respect, Mr. Clear's remarks stand out in sharp contrast to the petty querulous criticisms and ill advised aspersions on American Engineers so prevalent in other quarters.

The opportunity afforded the Standard Oil company in the North China Oil Fields and the new mining regulations were cited as evidences that China is favoring the development of her resources.

Turning to railways, which loom largely in the development of the country, Mr. Clear said that at no period in Chinese history had so many agreements for their construction been completed as during the last twelve months.

The first in order of signature of Agreement was the Pukow-Sinyangchow Railway. This, together with the Shanghai-Nanking, the Shanghai-Hangchow-Ningpo and Canton-Hankow Railways was included under a Concession obtained by the British and Chinese Corporation in 1898, when a preliminary Agreement was entered into, upon the understanding that the final terms should await those of the Shanghai-Nanking Railway, and be drawn up similarly.

It was not until July, 1903, that the Shanghai-Nanking Railway Agreement was signed. It was then decided to construct the Tientsin-Pukow Railway before concluding arrangements for this cross country line, and not until 1912 were negotiations resumed. The agreement was signed on November 14, 1913.

"The survey is now clearly complete and construction work had actually commenced when war for the fourth time in this railway's history has put a temporary stop to further construction work. The line starts from Wu-I on the Tientsin-Pukow and connects up with Sinyangchow on the Peking-Hankow Railway, a distance of approximately 260 miles. The country traversed is a rich agricultural district with practically no other means of communication or of transport than that supplied by carts. China carts on Chinese road are, under the best of circumstances, a slow and unsatisfactory means of transport for goods, and for passengers, possibly painful might be added. In addition to a heavy grain traffic there are considerable coal deposits existing in the near neighbourhood of the line which may be developed to the benefit of the railway both from its own fuel supply and as an item of freight. There is every possibility that this railway will affect the future of Shanghai as it opens up a large tract of practically untouched country, and given better means of communication across the Yangtze at Nanking than at present exists for the handling of goods traffic in bulk, a great deal should find its way into our local markets."

The Nanking-Nanchang-Hunan Railway would connect with the Shanghai-Nanking Railway at Nanking and extend through Nanchang

joining the great Canton-Hankow trunk line either through Pingsiang at Chuchow or possibly direct with Changsha. The line would traverse Anhui and Kiangsi, provinces rich in agricultural produce and in minerals, particularly in coal. The agreement for this Railway was signed on March 31 of this year and the preliminary survey work had recently been started. The length of the main line is approximately 650 miles.

One small railway which amongst its mightier brethren might easily pass without notice but would be of considerable local importance was the junction line at present being surveyed between the Shanghai-Nanking and Hangchow-Ningpo Railways.

This small junction would overcome some of the disadvantages under which the Shanghai-Hangchow-Ningpo Railway was at present labouring, more particularly with regard to the terminal station at Shanghai. The present difficulties attending the transport of goods by this route afforded a good illustration of similar difficulties to be overcome in the transport of goods from the interior to the coast.

"From the Yangtze through the Poyang Lake and a magnificent series of waterways runs one of the great trade routes. Waterborne traffic on this route is interrupted at Yushan by a range of hills marking the border line of Kiangsi and Chekiang provinces. These hills necessitate a laborious carry over of some 30 miles to Changshan where boats are again requisitioned to convey the produce another stage upon its journey down the Tsingtong River to Hangchow. There the trade route diverges to Soochow, Wusieh, Shanghai and other towns. The great sea wall which runs unbrokenly from below Hangchow to the sea, whilst forming a barrier to hold the salt water of the Tsingtong river in check, obtrudes another obstacle to the transport of waterborne cargo proceeding inland. Goods are, therefore, once more discharged, and prior to the building of a railway, were loaded again into boats which literally fought their way through the narrow waterways of the city to the more open waters of the Grand Canal. This passage through the city was still further complicated by boats laden with produce from the towns previously mentioned, coming in the opposite direction. Knowing the "each man for himself" tactics of the Chinese boatman and the persistent power of his boathook, the wonder is, not that this short journey through the city of seven miles took one month for its accomplishment, but, that it was ever accomplished.

"To obviate this delay a Railway was constructed from Zahkow on the Tsingtong River to Konsenchiao on the Grand Canal to serve as a carry over between the two waterways and is now very fully occupied in the transport of native goods

"The railway known as the Shanghai-Hangchow-Ningpo Railway was connected to this short carry over piece of line, but owing, as previously stated, to the unfortunate position of the Shanghai terminus station, a very small proportion of the goods traffic is rail-borne to Shanghai. The junction line now being built will tend to remedy this objection by bringing the goods into closer touch with the markets of Shanghai."

A short line similar to that from Zahkow to Konsenchaio was also projected on the borders of Chêkiang from Yushan to Changshan. The boats would be better off eventually than they had ever been by acting as feeders to the railways and instead of doing a few long laborious trips each year, often under heart-breaking conditions, with interminable delays, many short trips could be made that would pay much better. Such combination of waterways and railways would result in ideal transport facilities."

Mr. Clear unfortunately omitted any reference to the important British railway contract for the Shasi-Singifu line, which will constitute the Western link in a great all British trunk line, from the sea at Shanghai to the provinces of Kweichow and Yunnan. Connecting at Changsha with the Nanking-Nanchang-Hunan line, the Shasi-Singifu Railway will serve as a very valuable feeder to the former and exert a great influence on the future of Shanghai.

WILLIAM WOODVILLE ROCKHILL.

While on his way to report to President Yuan the results of a confidential mission confided to him in April last, death overtook Mr. W. W. Rockhill at Honolulu. His loss will be keenly felt by China whose cause found in him a true and sympathetic friend and advocate. Americans will have special reason to regret the loss of his influence in Far Eastern Affairs, especially as concerns China, in which country he has always manifested a keen interest, and whose welfare and happiness was very close to his heart. At the time of his death he was personal Adviser to President Yuan, who learned to esteem and admire his work and character during the many years the two officials were thrown into intimate diplomatic association.

It was chiefly through his efforts that the United States Government released the huge portion of the Boxer Indemnity legally due to her, whereby the Chinese Government was able to establish the Tsinghua College which is now yearly sending so many Chinese students to be educated in America. The good influence that these students are wielding and will continue to wield in the shaping of the country's future, is immense, and for this and other reasons, Mr. Rockhill will be gratefully remembered by the thinking men of China.

The late Mr. William Woodville Rockhill was born in Philadelphia in 1854. He graduated from the Military School of St. Cyr, France, and served three years as lieutenant in the French Army in Algeria. He was appointed Second Secretary of the American Legation in Peking on April 9, 1884; Secretary July 1, 1885; Chargé d'Affaires *ad interim* at Seoul from December 11, 1886, to April 3, 1887; left Peking on leave April 2, 1888; resigned in the United States July 5, 1888, to take effect on expiration of leave; two scientific missions to China and Tibet under the auspices of the Smithsonian Institution, 1888-92; appointed Chief Clerk, Department of State, April 14, 1893; Third Assistant Secretary of State, April 14, 1894; delegate to the International Congress of Geography, London, 1895; Assistant Secretary of State, Feb. 1896; resigned May 10, 1897; appointed Envoy Extraordinary and Minister Plenipotentiary and Consul-General to Greece, Roumania and Servia, July 8, 1897; Envoy Extraordinary and Minister Plenipotentiary to Greece, Roumania and Servia, May 25, 1898; resigned May 19, 1899, on appointment as Director of the International Bureau of the American Republics; granted leave of absence July 20, 1900, to proceed to China as Special Commissioner of the United States; appointed Plenipotentiary on the part of the United States for the settlement of the Boxer troubles Feb. 24, 1901; signed the final protocol Sept. 7, 1901; resumed duties of Director of the International Bureau of the American Republics, October 24, 1901; resigned March 7, 1905; appointed Envoy Extraordinary and Minister Plenipotentiary to China March 8, 1905; designated Ambassador Extraordinary to represent the United States at the funeral ceremonies of His Majesty the Emperor of China, April 24, 1909; appointed Ambassador Extraordinary and Plenipotentiary to Russia, May 17, 1909; Ambassador Extraordinary and Plenipotentiary to Turkey, April 24, 1911; successor appointed September 4, 1913.

In April of this year he was appointed Adviser to President Yuan Shih-kai, and departed shortly afterwards on a special mission abroad.

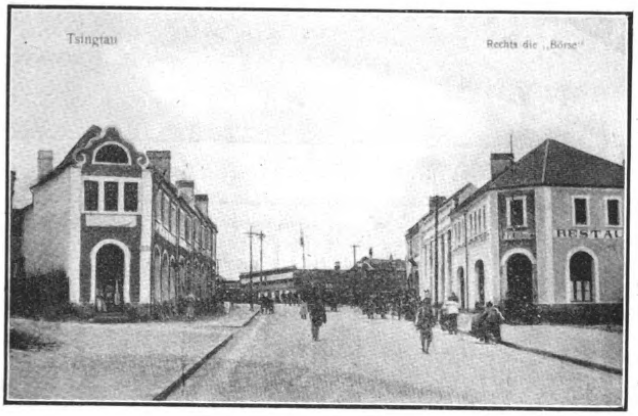
Mr. Rockhills's Last Speech

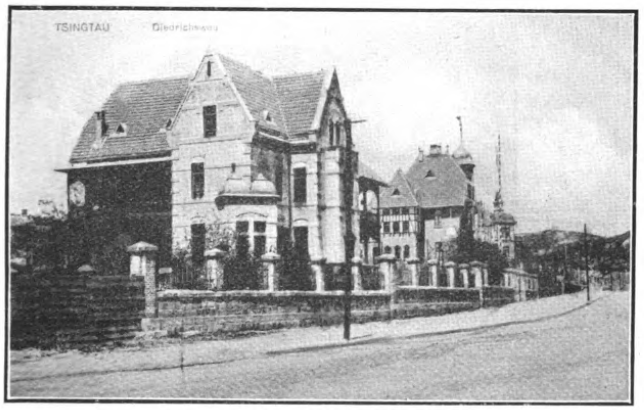
Just before his departure on his last journey Mr. Rockhill made a splendid address before the members of the Asiatic Institute, at a dinner in his honor held at the Century Club in New York on November 12th. This notable speech, his last public utterance, is of supreme interest to all Americans, and others concerned in the maintenance of the Open Door, and the peace of the Far East. It demonstrates that although the Administration now directing the affairs of America, has sidetracked American interests in the Far East, there are those who are keeping a watchful eye on the rapid succession of events which are slowly but nevertheless surely and effectively undermining her position and nullifying the spirit of the Open Door. The day must come when secret diplomacy will be compelled to face exposure and judgment before the bar of American public opinion, and when the natural and rational deductions are made from a presentation of actual facts, there will have to be a readjustment of conditions. Therefore Mr. Rockhill's last speech possesses an added interest at this time, and is reproduced in full.

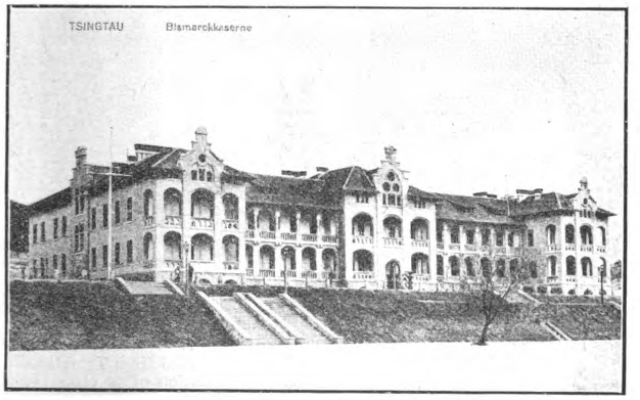
"Gentlemen: I deem it a great honor and an exceptional piece of good fortune that you have been so kind as to invite me to meet the members of the Asiatic Institute this evening and that you should permit me to address you on a topic in which you and I are keenly interested; that of the relations of China and the United States.

Among the objects of the organization of the Asiatic Institute was the "establishment of the study of Chinese progress and reforms, and the contribution by the co-ordination of American activities to the resolution of questions arising in Eastern Asia from the contact of different civilizations."

During the last six months I have had the honor of submitting to the Institute in three reports the general results of a journey which I undertook during last winter and spring through the Chinese Empire, a journey which led me to Urga, the capital of autonomous Outer Mongolia, to Harbin, the center of Russian influence in Manchuria, to Mukden, the headquarters of Japanese







VIEWS OF TSINGTAU.

It was reported in the *Weekly China Tribune* of May 3, 1914, that valuable iron ore had been found in the Kiaochou district. The paper adds:

"Recent investigations have shown that samples of the ore found contain 65 per cent. iron, 0.24 per cent. manganese, 0.03 per cent. phosphorus, and 0.08 per cent. sulphur, while the veins of ore are 25 to 50 yards in thickness. It is estimated that there are about 100 million tons of ore in the district. Its value is still further increased by the fact that there is a plentiful supply of coal in the vicinity. New ironworks will be erected at Tsangkau, and will have two blast furnaces, each with an output of 150 tons a day. The capital to be invested will amount to about $2,500,000 gold."

WORK OF SLAUGHTERHOUSE—MISCELLANEOUS BUSINESS.

It is worthy of note that 27,168 cattle were slaughtered during 1913, as against 12,010 in 1912, a gain of 126 per cent. The increase was the result of a large demand for export, more than 20,000 cattle being shipped to foreign ports. This is accounted for by the more or less sustained high prices in foreign markets and the reduction of the Government tax at the close of 1912 from $1.50 to $1 per head. There was a slight increase in the number of pigs and sheep slaughtered and a falling off in the number of calves. The totals for 1913 were: Calves, 1,909; sheep, 3,044; and pigs, 13,222.

Five firms are interested in the export of beef in winter and live cattle in summer, all of which are destined for Vladivostok.

The reasons for the heavy export from Tsingtau as compared with Tientsin are the fact that communication with the producing centres, viz., Shantung and Honan, is very easy owing to the railway, and the perfectly equipped and managed Government slaughterhouse where two veterinary surgeons are constantly employed. In the slaughtering season (November to April inclusive) these are increased to five. The Russian Government also appreciates the German system of examination of every part of the animal. All beef imported into Vladivostok has to be accompanied by a certificate from a Russian veterinary surgeon, of whom there are several. 82,508 quarters and 28,413 head were shipped during the year.

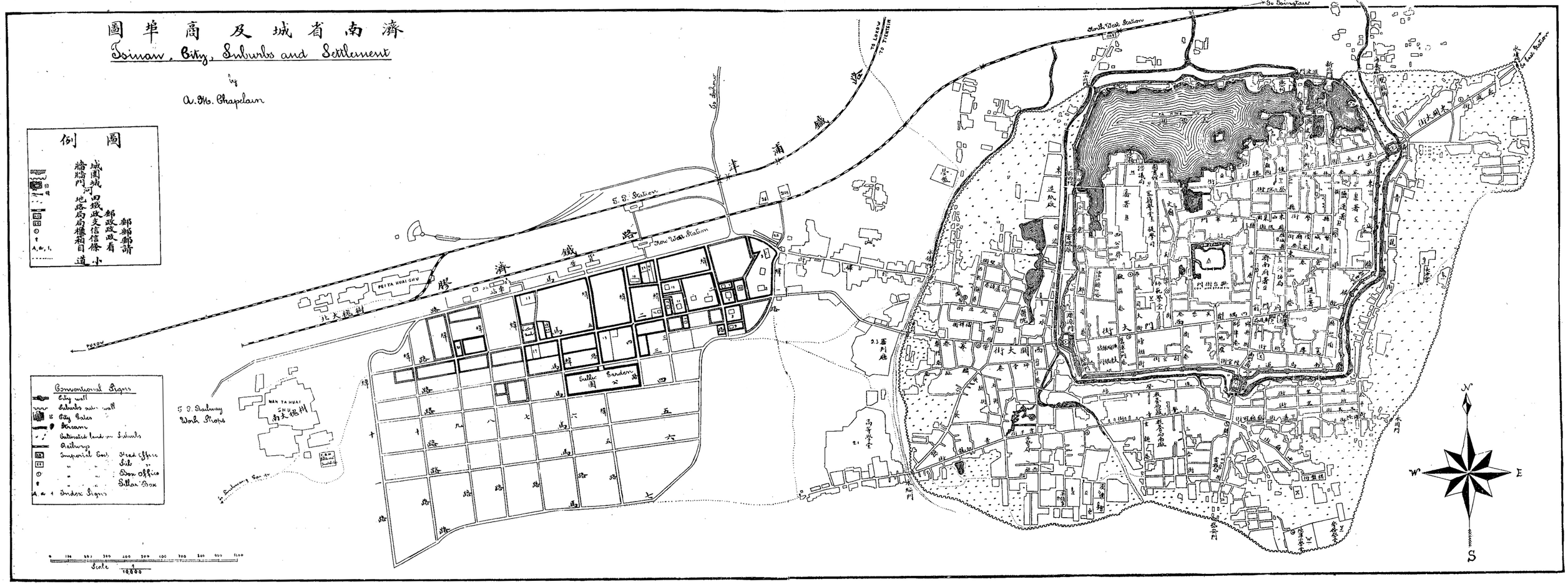
Among the new enterprises projected this year in Tsingtau, the iron foundry, which it was proposed to start before the end of 1914, has already been mentioned. In January of this year the Chartered Bank opened a branch office, making now five recognized exchange brokers in all. The Yu Tai Bank, a Chinese concern, opened its doors about the same time. The competition has been very spirited. A large hat factory under German management was planned for the present year.

SHANTUNG RAILWAY.

The year 1913 marked an advance in the affairs of the Shantnug Railway Co. The goods carried over this line amounted to 911,434 tons in 1913, as against 827,222 in 1912, a gain of 10 per cent. As a specific declaration of the kind of goods is no longer required, except in the case of those articles dangerous to handle ,it is not possible to give reliable information as to the sort of goods shipped over the line. They were probably much the same as in 1912, when raw cotton, beans, bean oil, groundnuts, straw braid, skins, hemp, jute, tallow, and walnuts were shipped from the interior, and timber, cotton goods, cloth, petroleum, sugar, and cigarettes were transported westward from the coast. A heavy reduction in freight rates has been made on import cargo to points west, but a slight reduction only to crops shipped east to Tsingtau. There was also a slight increase in the number of passengers carried over the Shantung Railway during last year. In 1913 there were 1,317,437 passengers, as against 1,230,403 in 1912, a gain of 7 per cent. As the gain in 1912 over the preceding year was more than 35 per cent, this small increase has been something of a disappointment. It is accounted for by the competition of the Tientsin-Pukow line. Many travelers going to Shanghai now go straight by rail to Nanking instead of traveling by way of Tsingtau.

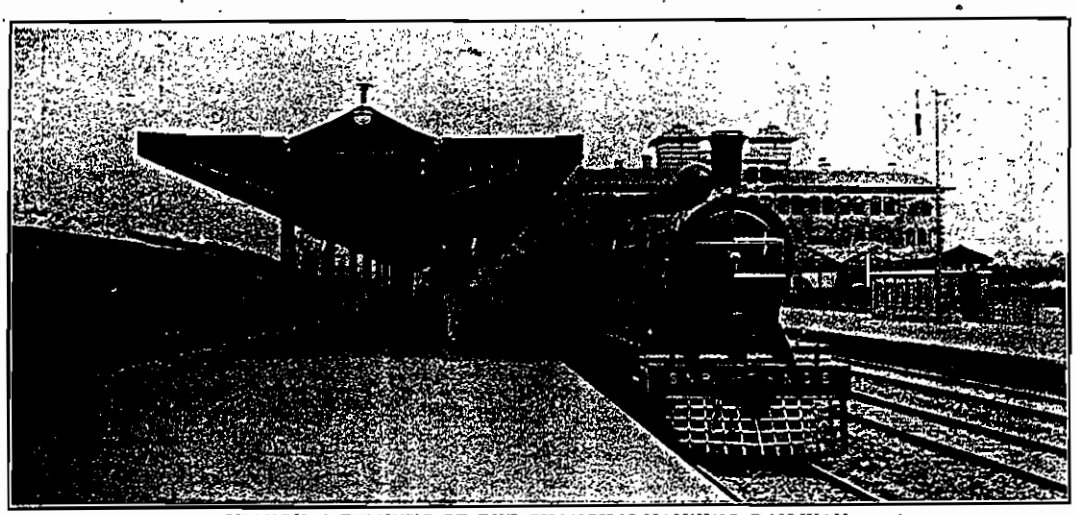
The table below will show the steady increase during the past five years:—

	Tons.
1909	712,060
1910	760,123
1911	705,073



Plan of Tsinanfu: (from "Shantung")

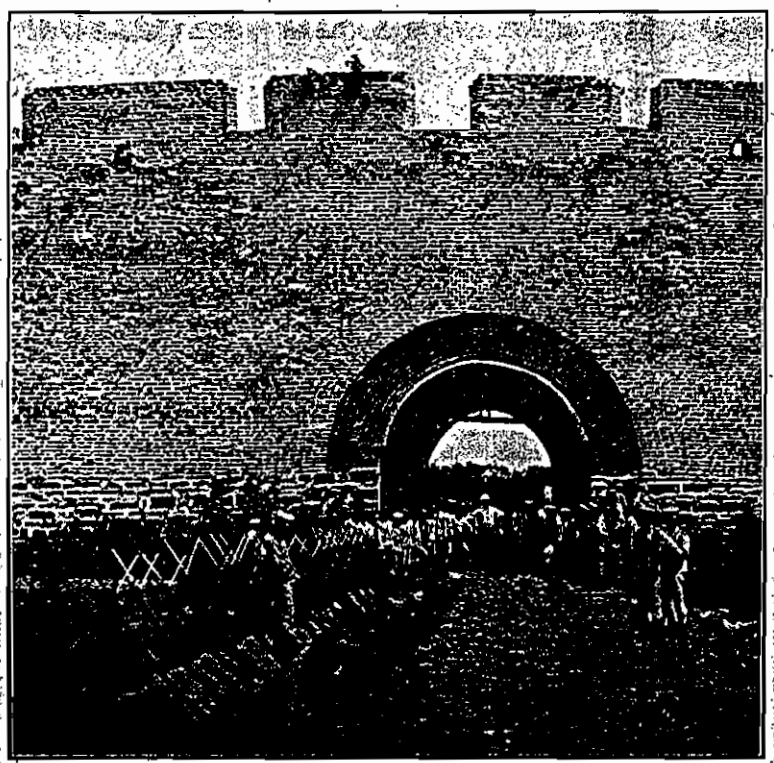
The Line of A Hundred Pagodas



SHANGHAI TEMINUS OF THE SHANGHAI-NANKING RAILWAY

THREE EXPRESS SERVICES DAILY, WITH RESTAURANT AND SLEEPING CARS BETWEEN SHANGHAI, SOOCHOW, WUSIH, CHANGCHOW, CHINKIANG AND NANKING

SEE THE NANKING BATTLE-FIELDS



THE WALLS OF NANKING

DELIGHTFUL WEEK END EXCURSIONS

THE SHANTUNG RAILWAY

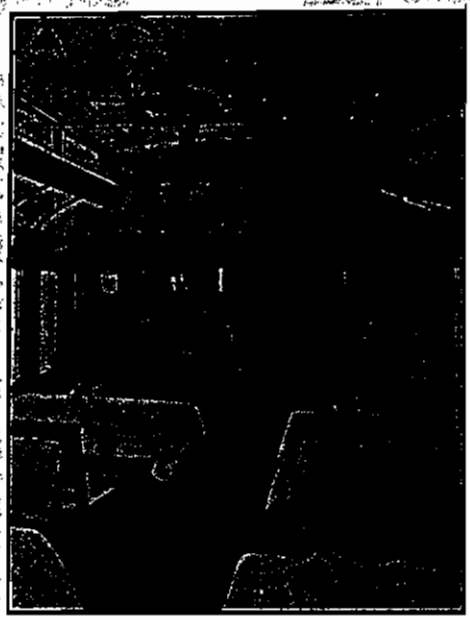
(Schantung Eisenbahn Gesellschaft)

The Road Through the Country of Confucius

The country traversed by this line is thought by many to be the most picturesque to be found in China. The length of the main line from Tsingtau to Tsinanfu is 400 km. and the length of the Poschan branch is 40 km. There are in addition branches to Hungschan, the Hsiau-ching-ho Canal and the Yellow River.

A lovely view is afforded of Kiauchou Bay as the train leaves Tsingtau.

Thereafter magnificent and diversified scenery is encountered and innumerable places of historical interest are traversed.



Interior of Dining Car

Facilities are afforded for through tickets carrying the passenger over the Tientsin-Pukow Line, giving a good connection with Express trains from and to Europe.

Tickets for the Shantung Traffic is running from the Railway can be obtained at the Agencies of Thos. Cook & Co., Ltd., The International Sleeping Car Co., and the Nordisk Resebüreau in Asia and Europe.

Shantung Railway to the Tientsin-Pukow Railway, and vice versa without changing cars at Tsinanfu.

CHINESE GOVERNMENT RAILWAYS

THE TAO-CHING RAILWAY

TAOKOU TO CHINGHUA

(CHINESE GOVERNMENT HONAN LINE)

GENERAL VIEW OF COAL MINES ON THE LINE OF THE TAO-CHING RAILWAY

"China's Road of Anthracite"

THE TRAINS OF THIS LINE CONNECT AT SIN-SIANG-SIEN WITH THE THROUGH SERVICE OF THE PEKING-HANKOW RAILWAY. IT TAPS THE GREAT ANTHRACITE COAL DEPOSITS OF SHANSI, AND CONVEYS THE PRODUCTS OF THE MINES TO THE NEAREST NAVIGABLE RIVER.

Chinese Government Railways

The Cheng-Tai Railway

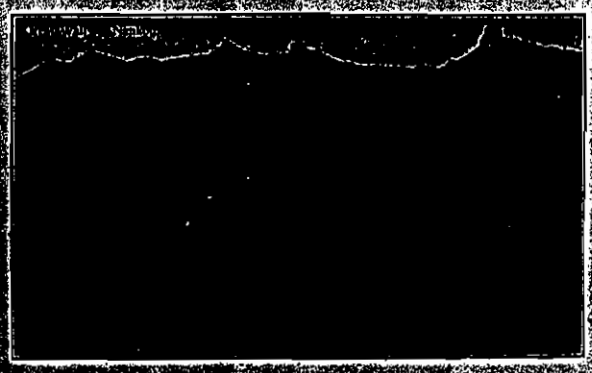
(CHINESE-GOVERNMENT SHANSI LINE—CHENGTINGFU TO TAIYUANFU)

VIEWS ALONG ROUTE OF CHENG-TAI RAILWAY.

The trains of this line connect with the through service of the Peking-Hankow Railway, affording Travellers the opportunity of seeing the most picturesque part of China. The line passes through a mountainous section of country, rich in Mineral Resources to the Provincial Capital of Shansi at Taiyuanfu. This interesting city is a great educational center, and famous for the fine quality of its artistic embroideries.

The Peking-Kalgan Line

"THE ROAD TO THE GREAT WALL"



This line follows the ancient caravan route and military highway from Mongolia into China by the way of the historic Nankow Pass. This pass is the Key to Peking, and Kalgan is the gate of the Country. From here the great camel caravans set out on their long journeys across Mongolia to Siberia and Central Asia. This old frontier mart, retaining its time-honored characteristics, one of the most interesting sights of the Old World, is made accessible by the new railway. The line also carries the passenger in two hours from Peking to Nankow, where the Great Wall of China and the Ming Tombs may be seen. A foreign hotel is operated by the railway authorities at Nankow, where chairs and guides may be secured for the Tombs.

中華民國政府吉長鐵路行車時刻表

CHINESE GOVERNMENT RAILWAYS, KIRIN-CHANGCHUN LINE.

TIME TABLE.

UP TRAINS Daily			STATIONS.		DOWN TRAINS Daily	
Mail	Mixed				Mixed	Mail
6.10	11.05	arr.	TOUTAOKOU	dept.	2.20	7.30
5.57	10.52	dept.	CHANGCHUN	arr.	2.32	7.42
5.51	10.46	arr.		dept.	2.42	7.50
5.23	10.16	dept.	KALUN	arr.	3.14	8.19
5.21	10.14	arr.		dept.	3.19	8.22
4.55	9.46	dept.	YINMAHO	arr.	3.46	8.47
4.53	9.44	arr.		dept.	3.51	8.49
4.40	9.30	dept.	HSIACHIUTAI	arr.	4.05	9.02
4.38	9.28	arr.		dept.	4.10	9.04
4.28	9.17	dept.	YINGCHENGTZE	arr.	4.21	9.14
4.26	9.12	arr.		dept.	4.27	9.16
4.04	8.51	dept.	TUMENLING	arr.	4.50	9.39
3.54	8.41	arr.		dept.	5.00	9.49
3.39	8.25	dept.	CHAOCHIATIEN	arr.		
		arr.		dept.	5.16	10.04
3.16	8.02	dept.	HUAPICHANG	arr.	5.38	10.22
3.14	7.57	arr.		dept.	5.43	10.26
3.00	7.43	dept.	KUTIENTZE	arr.		
	7.42	arr.		dept.	5.58	10.40
2.45	7.28	dept.	KIUCHAN	arr.	6.13	10.55
2.43	7.23	arr.		dept.	6.18	10.57
2.25	7.05	dept.	KIRIN	arr.	6.38	11.15

BIRD'S EYE VIEW OF KIRIN CITY

NOTICE:—"dept."=Departure, "arr."=Arrival. Light type figures=A.M. time. Heavy type figures=P.M. time.
1st May, 1914, and until further notice.

ANDERSEN MEYER & CO.

ENGINEER'S AND CONTRACTOR

4 and 5 Yuen Ming Yuen Road, Shanghai

SOLE AGENTS FOR:

GENERAL ELECTRIC CO. OF NEW YORK.
Electric Light, Power & Railway Apparatus, Electrical Supplies.

BRITISH THOMSON-HOUSTON CO. LTD. OF RUGBY.
Electrical Machinery and Supplies.

BUDA CO. OF CHICAGO.
Railway Material, Track Supplies, etc.

THE McCONWAY & TORLEY CO. For Shanghai, Hankow & South China.
Janney Penn Car Couplers.

C. T. HAM MANUFACTURING CO.
Lanterns and Lamps.

BOLTE & WEYER CO.
Gasoline Lighting Systems.

KEUFFEL & ESSER CO.
Drawing Materials and Surveying Instruments.

THE FERRO MACHINE & FOUNDRY COMPANY.
Gasoline Stationary & Marine Engines.

THE H. W. JOHNS-MANVILLE CO.
Asbestos Goods, Steam Packing, etc.

A. & P. STEVEN.
Lifts.

NATIONAL CARBON CO., CLEVELAND, U.S.A.
"Columbia" Dry Batteries and Carbon Products.

DEMPSTER, MOORE & CO.
Machine Tools & Saw Mill Machinery.

THE SULLIVAN MACHINERY CO.
Mining Machinery.

THE GOULDS MANUFACTURING CO.
Pumps and Hydraulic Machinery.

WHEELER CONDENSER & ENG. CO. CARTERET, N. J.
Condenser Pumps.

GARDNER GOVERNOR CO., QUINCY, ILL.
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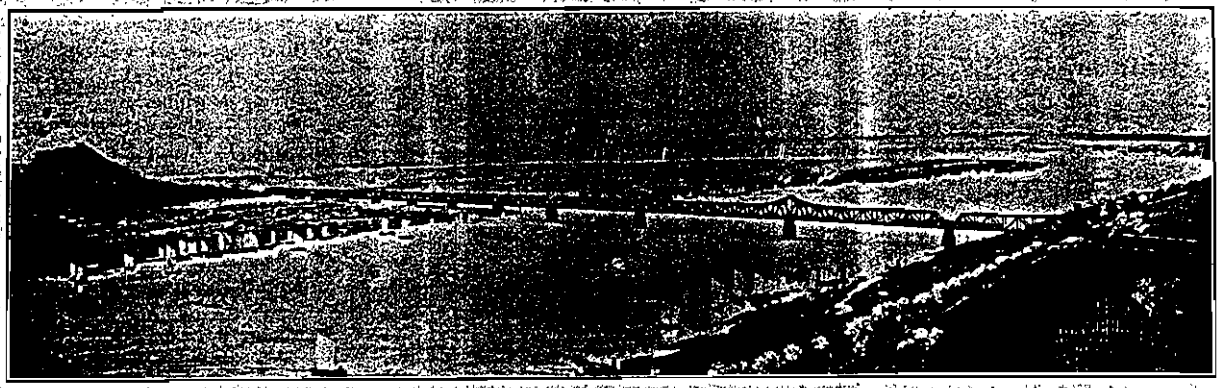

THE YELLOW RIVER BRIDGE

TIME TABLE

18th January, 1915, and until further notice

Slow		Miles				Mail	
	5.40	0	dep. Peking	Peking-Mukden Line	arr.	18.55	
	9.20		arr. Tientsin-Central		dep.	15.58	
	9.25	82	dep. Tientsin-Central		arr.	15.53	
	9.33		arr. Tientsin-East		dep.	15.45	
						Mail	
		0	dep. Mukden		arr.	19.27	
			arr. Tientsin-East		dep.	1.25	
		434	dep. Tientsin-East		arr.	1.10	
			arr. Tientsin-Central		dep.	f) 1.01	
Mixed	Mail					Mail	Mixed
	9.40		dep.	Tientsin-East	arr.	15.37	
	9.50	0	arr.	Tientsin-Central	dep.	15.27	
5.15	10.10		dep.	Tientsin-Central	arr.	15.07	21.16
9.45	13.43	76	dep.	Tsangchow	dep.	12.01	16.53
13.52	16.52	146	dep.	Techow	dep.	9.15	12.28
17.59	19.41	218	arr.	Tsinanfu	dep.	6.30	8.30
7.10	20.01	218	dep.	Tsinanfu	arr.	6.10	18.30
9.59	22.38	263	dep.	Taianfu	dep.	3.53	15.48
12.50	1.29	316	dep.	Yenchowfu	dep.	1.15	13.02
15.56	4.48	375	dep.	Lincheng	dep.	22.11	9.46
18.12	6.56	418	arr.	Hsuchowfu	dep.	19.54	7.20
13.45	7.16	418	dep.	Hsuchowfu	arr.	19.34	11.25
19.14	11.20	520	arr.	Pengpu	dep.	15.01	6.05
5.45	11.30	520	dep.	Pengpu	arr.	14.51	20.48
10.20	15.10	598	dep.	Chuchow	dep.	11.20	16.13
12.03	16.30	629	arr.	Pukow	dep.	9.50	14.20
Express	Express					Express	Express	Fast
			dep. Nanking Ferry	Shangkai-Nanking Line	arr.		7.05	
13.20	23.00	0	dep. Nanking		dep.	19.00	7.00	15.04
19.35	7.00	193	arr. Shanghai		dep.	13.05	23.00	7.35

Yenchowfu-Tsiningchow Branch Line							Lincheng-Tsochuang Branch Line						
9.15	14.30	dep.	Yenchowfu	arr.	8.03	12.02	11.20	17.50	dep.	Lincheng	arr.	8.08	14.38
10.18	15.33	arr.	Tsiningchow	dep.	7.00	11.00	12.28	18.58	arr.	Tsochuang	dep.	7.00	13.30

f) Thursdays and Sundays only.

Application for sleeping accommodation at $3.00 per berth should at the earliest possible moment be made to the Traffic Manager at Tientsin or to the Traffic-Inspectors at Tientsin, Tsinanfu, Hsuchowfu or Pukow.

By Order,
The Traffic Manager.

Tientsin, 18th January, 1915.

THE BRITISH ENGINEERS' ASSOCIATION

In 1912 there was organized in London a combination of British manufacturing engineers under the corporate title of the British Engineers' Association, whose prime object was the advancement of British engineering practice abroad, with special reference to China. The aims of the Association as set forth in its propaganda literature, and the success claimed for its work in China after two years of existence, have such a far reaching effect on the trade of other countries and bearing on certain important questions relating to the maintenance of the Open Door, and the position of America, that it is our duty to place before our readers some pertinent facts connected with its policy and propaganda. In order to avoid all misunderstanding we present herewith in the form of an appendix the official circular of the association for 1913, as well as certain articles which have appeared in inspired British papers, on which our deductions are based.

We have followed with close interest the reported development of the campaign carried on in China for the advancement of the special objects of this Association, and have carefully read and preserved all records about its work and plans published in British newspapers, especially such articles as have appeared from time to time in the columns of "Eastern Engineering" a monthly trade paper which faithfully reflects the policy of the Association. As the motives of the Association and those which guide the above mentioned trade journal, have so much in common, a reference to the policy of "Eastern Engineering" is necessary for a full understanding of the following arguments.

"Eastern Engineering" was founded in 1910 by Mr. Stafford Ransome, a journalist of undoubted ability, and a competent authority on certain phases of Far Eastern affairs. The keynote of his editorial policy and bid for support rested solely on an appeal to the intense national feelings of British manufacturers, and found expression in the standing notice carried in the Editorial heading of the paper announcing **"No Advertisements of Continental or American Manufacturers can be accepted on any terms."**

Mr. Ransome's journalistic energies were concentrated primarily on an alleged exposure of German trade methods and competition which he openly characterized as the German "blight," *to be exterminated at any cost.* After Germany, the American manufacturers and their reputed success in China came in for his denunciation and criticism. It is quite evident that a purely national organ, appealing to the existing national jealousy against Germany, with the British flag nailed firmly to the mast, and whose policy was a constant insult to Germans and their business methods, and an exhibition of journalistic spleen against all manufacturers other than British, could not hope to be a complete success in the complex international trading community residing in China, where the paper was expected to carry weight and influence. Many important British engineering manufacturers have for years entrusted their interests in China to German firms; many German manufacturers were likewise represented by British traders and both German and British firms in China efficiently and faithfully acted as the agents of American manufacturers. Owing to the existence of national monopolies and the slow development of industries and railways in China, manufacturers of all countries finding the business did not warrant the maintenance of their own offices or representatives were satisfied to entrust their interests to those trading firms already firmly established, whose financial standing guaranteed the payment of the orders secured. The situation from a national viewpoint was far from being ideal, but the manufacturers if dissatisfied with the agent always had the option of establishing their direct branch offices. In other words, commerce, especially in the engineering branches, was conducted in China as fitted the exigencies of the existing conditions with more or less harmony between manufacturers at home and their agents. It is obvious that trading concerns of the same nationality as the manufacturers they represent, should preferably be entrusted with pushing their mutual national interests, but where this is not always possible, there is no other remedy but to arrange an agreement with the firm best equipped to get the business, regardless of nationality.

The campaign against German and American competition and the attacks on their methods naturally engendered intense national feeling and animosities, especially amongst the many reputable and enterprising German firms who were large dealers in British goods. A feeling of resentment was born which has steadily developed into open expressions of national hate. There is no surer way of intensifying national hatreds than by the injudicious employment of newspaper invectives, and most modern wars can be traced ultimately to the gross partiality of inspired national organs.

It is an axiom with all honest merchants that lasting trade cannot be built up by discrediting the wares of the competitor Successful business is based on the intrinsic superiority of the products offered for sale, except where cheapness is the essential quality. If goods lack merit, no amount of persuasion can secure repeat orders. The merchant or salesman who relies on defaming the character, methods and wares of his competitor, instead of demonstrating the superior quality of his own, cannot hope for permanent success. And so with Nations and National Associations. Characterizing German trade methods as the German "blight" to be exterminated at any cost is no inducement for Chinese and other purchasers to patronize British manufacturers, nor is it conducive to perpetuating cordial trade relations with other large and important nations who freely purchase British goods. If the German "blight" is obliterated, we may reasonably expect that once their threatening competition is killed, the epithet of "blighters" will be extended to the next formidable competitors, who in the mind of "Eastern Engineering" are the Americans.

The policy of "Eastern Engineering" finds partial expression in the following extract from an editorial in the June, 1912, issue.

> "At the present day, or rather, just before the revolution, China was worth as a recipient of machinery, metals, other engineering plant and engineering accessories, something like £8,000,000 annually. Of this some 40 per cent fell to the share of British firms. *That is not enough*, and it is not nearly what it would be but for the fact that our manufacturers are handicapped by a network of unfair conditions."
>
> "To begin with China has been mortgaging her financial soul to our competitors and when the bankers of other nations lend her money they have invariably coupled their accommodation with stipulations which have told in favor of their own manufacturers. When British financiers lend money to China they ignore the interests of the engineering firms entirely, and as often as not any plant purchased with the money thus lent is ordered from our foreign competitors. If the British Engineers' Association can affect alteration in this iniquitous class of transaction it will have justified its existence on that ground alone."

This last misleading statement indicates the intense patriotic program of Mr. Ransome. He admits that the British share of China's engineering imports in 1911 was 40 per cent of the total, but holds that it is not enough. In view of other national activities and interests in China, the impartial critic would say that Great Britain's share was rather more than a fair percentage of the total, and Mr. Ransome's comment would indicate that he held the view so often advanced against a certain type of Britisher, that he wanted to "hog it all" for Britain. A surely worthy and patriotic feeling, but rather indifferent to the legitimate aspirations of those other than British who also look for a fair share of the great Chinese market under the established laws of free competition. Mr. Ransome's ideas found ready listeners. Out of an article in "Eastern Engineering" sprang the germ for the creation

of a strong British Engineers' Association for the furtherance of their interests in China. The idea was received with approval and adopted by some of the largest engineering concerns. Mr. Ransome took a very active part in the preliminary propaganda work and organization of the Association and was rewarded with the position of active Secretary of the incorporated body. In relinquishing the management and editorship of "Eastern Engineering" to assume his new duties, the journal editorially announced that although he would take no further active part in the management of the paper, there would be no change from the policy he had initiated. Mr. Ransome has no further active official connection with "Eastern Engineering," the paper is very emphatic on this point, in fact very touchy, but the evidence is irrefutable that his policy still directs its work, and he personally directs the work of the Association. In establishing the connection between "Eastern Engineering" and the British Engineers' Association we cannot be accused of distorting facts, as our only sources of information are the printed statements of the journal itself. The following facts extracted from the pages of the journal are not without their significance.

Mr. Stafford Ransome, until he became Secretary of the British Engineers' Association, was the founder of and managed and edited the two journals, "Eastern Engineering" and "African Engineering." They were created exclusively for the furtherance of the interests of the British manufacturing engineer, even to the exclusion of foreign advertising and rejection of German subscriptions. The ownership of these papers was vested in a limited liability company styled the British Press, Ltd., in which Sir William Porter and a Mr. Brindley appeared as Proprietors and shareholders. As Mr. Ransome was the founder, manager and editor it is fair to assume that he was also a shareholder. The original idea for the formation of the British Engineers' Association sprang from the brain of Mr. Ransome, and the Association makes formal and due acknowledgment of the great services rendered by the above named gentleman, and rewards him with the position of its permanent Secretary.

"Eastern Engineering" is very emphatic in asserting that there is no connection whatever between it and the British Engineers' Association, and that no one holding interests in the one concern holds any interest whatever in the other. We have no desire to press the point, but as Mr. Ransome is only a salaried secretary or employee of the association, he of course does not hold any interest in it. He might still hold his interest in "Eastern Engineering" and the above statement would be technically correct. We can also be fair and take it that Mr. Ransome has disposed of any shares he may have held in the British Press, Ltd. It cannot alter the situation.

It is clear, however, that as long as the British Engineers' Association retains his services as its active secretary, in charge of all its correspondence and propaganda work, there will always exist a very strong link which binds it to "Eastern Engineering," which openly declares that Mr. Ransome's policy still guides its work. There may be no technical financial connection, but a community of interests and policy will exist as long as the creator of the joint enterprises manages the operations of the Association. I have endeavored to establish and emphasize this connection as on it hinges to a large extent the corporate honor of the Association itself, as the following facts will amply prove. Some one blundered and has brought upon the Association as a whole a most serious charge, from which it can only escape with dignity and honor by fixing the responsibility upon the person or persons guilty of holding them up to judgment.

We can now proceed to a careful study of the objects of the Association, the means by which they are obtained and a frank discussion of the ethics involved. We hope to prove that although the aims of the Association are worthy and legitimate, the tactics officially adopted to gain their ends are open to honest criticism as being unworthy of a great and powerful organization operating under official approval and support. To avoid the faintest charge of misrepresentation or unfairness we append to this all references. With these before us we can now proceed to analyze and discuss the points we desire to accentuate.

The first and most significant item that strikes the eye and one which later on in the discussion assumes the greatest importance, is the official list of the Honorary Members of the Association. At the foot of the roll of eminent Britishers who have contributed to the advance of their country's prestige in China, appears the well known name of Dr. George Ernest Morrison, newly appointed Adviser to the Chinese Government. In referring to the previous literature of the Association, and to the printed reports of speeches, it is found that the name of Dr. Morrison as the Adviser to the Chinese Government was on various occasions publicly mentioned as an Honorary Member of the Association. The latest official circular of the Association dated January, 1914, still bears the name in the list of Honorary Members. In a speech delivered by Sir Walter Hillier, the predecessor to Dr. Morrison as Adviser to the Chinese Government and a personal friend of the latter, at the Inaugural Dinner of the Association held at the Hotel Metropole in London on December 3rd, 1912, special reference was made to Dr. Morrison in the following terms: "Dr. Morrison, an Honorary Member of this Association, perhaps a still greater authority, maintains that China is already regenerated." Here we have not only the official record of the Association but a direct reference by Sir Walter Hillier that Dr. Morrison, the Adviser to the Chinese Government was an Honorary Member of the British Engineers' Association, which identifies him with all their objects and implies that he is in cordial sympathy with their program. Are we justified in inferring from this connection, that Dr. Morrison must necessarily employ his high position and influence to promote the special objects of the Association with the Chinese Government?

Otherwise why should his membership be solicited to an engineering association, and his name spoken of in official meetings and published in official circulars. Dr. Morrison is a physician and a journalist, he is not an engineer. In what manner then could Dr. Morrison promote the objects of the Association except through the influence of his position as Adviser to the Chinese Government, which to those on the ground means the Confidential Adviser to the President and the circle of immediate officials who control the Government. Dr. Morrison's position is one quite distinct from all other advisers. The utmost secrecy attaches to his work with the President. His value to the Chinese depends on maintaining his reports secret. His influence with the President and the Cabinet is undeniably great. The value of his advice to the Chinese Government rests solely on its sincerity and disinterestedness. As an honorable gentleman his duty to the Chinese is to give them counsel, free from any taint of national prejudice. Otherwise his services are worthless to the Chinese, and all other nations have just grounds on which to vigorously protest against his retention in such an office. The mere fact that Dr. George Ernest Morrisons' name is included in the list of Honorary Members of the British Engineer's Association, while he is actively holding the trusted position of confidential adviser to the Chinese Government is in itself an accusation of interested motives which, if true, would disqualify him for the position. All nations other than British would have an undeniable right to demand his immediate dismissal from the post as his activities and sympathies must perforce be a menace to their legitimate aspirations to participate equally in the development of China.

In some quarters Dr. Morrison's reputation has already received a blow from this published connection. Is it fair for American manufacturers (and those of all other nations) to look on Dr. Morrison as the special instrument for advancing the objects of the Association with the High Authorities at Peking? Is it unjust for those whose interests are jeopardized, to ask if it is through Dr. Morrison's influence that the Association is to advance its special objects to have all American and German engineering advisers to the Chinese Government replaced by Englishmen, and to bring the necessary pressure to bear on the Chinese for the adoption of British engineering standards and specifications to the exclusion of all others? Is it through Dr. Morrison's intimate knowledge of what goes on behind the scenes in official China, that the Association is to receive the advance information to enable them to forestall all competitors, in fact is it unfair that others should see in him the one great instrument of the Association to assist them in their schemes?

If the Association has employed Dr. Morrison's name without his permission then they are guilty of destroying his reputation and usefulness, and he has a legal right to demand heavy damages in compensation. We understand that Dr. Morrison has stated that the Association used his name without his permission. If true, he has been deeply wronged, and no public apology can adequately wipe out the impression that has been created amongst many who may never read or hear of the correction.

So far we have dealt with that phase of the matter which concerns the Association and Dr. Morrison. We will now turn to the pages of "Eastern Engineering," whose policy is dominated by the Secretary of the British Engineers' Association. We have already established the connection existing between the Association and the journal. The Secretary of the Association is admittedly responsible for the editorial policy of the paper in question. In view of the intimate confidential relations which must exist between him and his former assistant who is now editor, it is fair to assume that any editorial reference appearing in "Eastern Engineering" concerning the work and policy of the Association must be authoritative. Under the title of "The Rapid Progress of the British Engineering Association" there appeared a leading editorial in the issue for June, 1913. In the course of this article appears the following significant sentence:

"But apart from the influence of its members, the Association has been extremely fortunate in possessing as its Honorary Members and ADVISERS men like Sir Walter Hillier and Dr. Morrison, the late and present advisers to the Chinese Government respectively."

Here we have a semi-official announcement through the inspired "Eastern Engineering" that Dr. Morrison in addition to being an Honorary Member, is also an ADVISER to the British Engineers' Association while he is actively holding the position of Adviser to the Chinese Government. Despite all disclaimers to the contrary, all information published by "Eastern Engineering" concerning the work of the Association, must be considered as authoritative. With all the facts before us, the impartial critic is justified in accepting it as official. So here we have an official and authoritative admission that Dr. Morrison, the present Adviser to the Chinese Government, is also an Adviser to the British Engineers' Association, thus firmly identifying him with the objects and campaign of the Association in China and with all that such advisership implies and signifies. In brief, is it fair to infer from this admission that the actions of the Association are guided by the undeniably valuable advice of its adviser? The editor of "Eastern Engineering" has apparently laid himself open to prosecution for libel.

The official use of Dr. Morrison's name as an Honorary Member of the Association at the time he is holding the position of Confidential Adviser to the Chinese Government in itself was sufficient to undermine his usefulness, but in the coupling of his name in the capacity of Adviser to the Association and Adviser to the Government at the same time and in the same sentence, those responsible for such a libel, have done him a grievous wrong. A further study of the aims and objects of the Association will make it clear why in the face of these statements it would be impossible for Dr. Morrison to retain his post and continue to enjoy the trust and confidence of other nations and the Chinese, if they were true.*

There can be no just criticisms on the general plans of the Association for the purely legitimate advancement of British Engineering principles in China, but an examination of the objects as revealed in the official circular and in speeches expose certain aims which every other nation has a right to protect itself against, in whatever manner it may see fit.

In the first place it is announced that the Association received the formal recognition of the Foreign Office on December 20th, 1912, and its status was recognized by the Chinese authorities. In other words the Chinese Government recognizes that the Association is official in character, which gives a decided advantage to the Agents of the Association in its dealings with Chinese officials. The Members are informed that the British Minister in Peking has been instructed by the Secretary of State for Foreign Affairs to give his official support to the Members of the Association who may be travelling in China, and to instruct the British Consuls throughout China to do the same. Is it unfair to assume that the Chinese officials who are not deeply informed as to the nice distinctions between official support and a purely Government bureau, should incline to the belief that the Association is some kind of a Government Department and its agents regularly accredited commercial attaches to the British diplomatic service in China. Close analysis will reveal that there is no distinction between the agents of the British Government, and the agents of an official organization having the full approval and support of the Government. A further perusal of the official circular in that part outlining the duties of the Resident Commissioner of the Association in Peking, reveals that one of his most important functions is to make full use of the fact that the Association is formally recognized by the Foreign Office. Still further on in the circular in describing the benefits arising from membership in the Association, the inducement is held forth that as the Association has the official recognition of the Foreign Office, it can obtain for its Members the support of the British diplomatic and consular officers throughout China. And we may add, that reading between the lines, and making a reasonable interpretation of the circular, this also conveys the idea, that as the official status of the Association has been recognized by the Chinese authorities, the inducement may also read that the Members can rely on receiving a most cordial reception from the latter, especially as they are all vouched for by the British Minister and the British Consuls throughout China.

The facts plainly set forth in the official literature of the Association therefore admit of only one interpretation and clearly identify the British Foreign Office, the British Legation at Peking and the British Consulates throughout China in addition to the British Confidential Adviser to the Chinese Government with all the aims, objects and aspirations of the Association and its propaganda. The manufacturers of all other nations have the right to believe therefore that the Association is official and works in co-operation with the British Government. We fail however to see the names of any high active officials of the British Government on the lists of Honorary or other membership, although a representative of the Foreign Office was present at the Inaugural Dinner. In the words of the President of the Association, it was not deemed prudent to ask this representative to say anything, as the Foreign Office did not wish him to say much. This scrupulous and exact attitude for the dignity of the British Government officials, is clear indication that the leaders of the Association had a fine appreciation of the ethics involved in coupling the name of any active British official with the work of the Association. This regard for the British diplomatic officers stands in striking contrast with the open use and abuse of the name and reputation of the Honorary Member who holds the important and delicate position of Adviser to the Chinese Government, especially as China was the country selected as the sphere of its immediate activity.

* We have received copies of the Official Circulars of the British Engineers' Association, dated October, 1913, and January, 1914. Our attention is directed to the fact, that in both these circulars, the Association has left nothing to the imagination as to the connection of Dr. Morrison with its campaign. On Page 22 of the October, 1913, circular, is found the official announcement that the Association is fortunate in having *seven* of the most eminent living authorities on China as Honorary Members and Advisers, and refers the reader to page 7 of the circular for their names. Reference to Page 7 discloses the names of seven, in which is included the name of Dr. Morrison, Adviser to the Chin se Government!

In the January, 1914, circular, the same statement is made but the names of *eight* Honorary Members and Advisers are referred to on page seven. Reference to this page again discloses the name of Dr. Morrison on the list of eight.

In other words, since the publication of the official information in the June, 1913, issue of "Eastern Engineering," the Association has itself officially classified the Adviser to the Chinese Government as an Adviser of the Association, thus firmly identifying Dr. Morrison with all their objects, and as one of their prime movers.

We are also in receipt of the inform ation that the Secretary ofthe Association has gone a step further and in the confidential bulletinsfor circulation amongst the members of the Association, he has led them to believe that Dr. Morrison was the main support of their Resident Commissioner at Peking for the advancement of their propaganda.

With a clear conception of the objects of the Association and the methods employed to attain success, with all that the official recognition of the British Government implies and signifies, with the logical inference which honestly can be drawn from the connection with the Adviser to the Chinese Government, and after a careful digestion of all the facts, can the honest and impartial critic be censured if he fails to distinguish any ethical difference between the methods employed by the British official Association and that of the much denounced German scheme for the furtherance of their foreign trade, only the latter went a step further and openly advocated the use of large sums for publicity purposes. The ends were the same, and apparently the end justifies the means in both instances, without inquiring too closely into the morals and ethics involved.

The only material difference seems to be that the German Foreign Office contributed the entire secret service fund of £12,500 per annum to the war chest of the German Association organized for the furtherance of German industrial prestige abroad. Of this, we will treat later on. For the present the fact is established that the British Government contributed the full weight of its official support to the British Association. The British Minister at Peking and the British Consuls throughout China were instructed to recognize the Association as official, and extend to it every support in its work, and the Resident Commissioner of the Association in China was instructed to make full use of this fact, and on the other hand it was held out as an inducement to secure the adherence of new Members, by the officers of the Association in their propaganda work in Great Britain. Although the British Government refrained from contributing hard cash to the campaign fund of its national organization, it did extend its unqualified moral and active support. It is not difficult to capitalize official support of this kind. In effect, it was more valuable to the work of the Association than an actual cash contribution, and it is clear that the Association fully appreciated this point by their advertisement of the support and the instructions to its Commissioner in China. Is it unreasonable to deduce from this, that new members were persuaded to join the association by emphasizing the official connection with the Government? We have heard of official support being employed in similar ways.

As new Members paid the initiation fees and annual dues, and became liable for such calls as might be made on them for special contributions, did not the official support of the British Government have a most important and distinct bearing on the finances of the Association? Or is it unreasonable to suppose, that this official support was employed as a club to compel reluctant members to join? For it is evident that if only Members of the Association were to receive official recognition, letters of introduction and credentials to high Chinese officials, and the assistance of the Agents in China, by the same token those manufacturers who preferred to do business in China independent of the Association, would be looked on as rank traitors and outsiders, and be refused all these advantages arising from official support, and be compelled to "paddle their own canoe." We are therefore compelled to believe that the official support tendered to the Association and its work, was equivalent to an actual cash subscription in its effects, and it can be and has been capitalized to the full in the furtherance of its designs.

While we are discussing the ethics and morality of official support in the form of cash, we may admit that we see no harm in this when the objects are the advancement of the national interests, as all Governments have funds for these worthy purposes, which do not always appear on the surface. The German Government was "caught in the act" and the gross immorality of subsidizing foreign newspapers and purchasing publicity to advance German interests shocked the finer sensibilities of the British. How much money have other nations expended in publicity work of this nature? "The Times" is a standing reminder to British readers, that special Supplements devoted to advancing the commercial interests of various countries, and paid for by official and private contributions, are not unknown in England. Has not Germany the right to purchase publicity in papers throughout the world for the same purpose? What was the object of the great Japanese Special Edition of "The Times," and the many Russian and other Supplements which have appeared from time to time in connection with this same paper? If "The Times" had not guaranteed to publish the articles in a favorable light for advertisement and furtherance of Japanese and Russian interests would the latter have paid the cost of the work? If the leading exponent of British opinion can find no harm and retain a clear conscience for selling its space for the advancement of other foreign interests, how can Germany be accused of immorality when she plans to do the same thing on a larger scale? All newspapers have space for sale either in the shape of special editions, supplements or reading notices, and as long as the editorial opinion is not bartered away, it is part of a newspaper's business and a source of legitimate revenue. You cannot apply one principle and code of ethics in England and deny to Germany or other nations the same privilegey.

This all leads us up to the next phase of the work of the British Engineers' Association, and permits some pertinent questions as to the morality of the British program. At the Inaugural Dinner of the British Engineers' Association, Sir Charles Dudgeon, one of its Honorary Members, made the following significant remark in the course of his speech; **"Money, of course, would be required. The Association must have its own agents to exploit the field, and in so vast a field they would need many agents. But it was not only for the salaries and travelling expenses of those Agents that money would be required.** TO GET BEHIND THE SCENES IN OFFICIAL CHINA WAS AN EXPENSIVE MATTER **and it was essential that the representatives of this Association should know everything that there was to know."**

Many constructions can be placed on this appeal, and in view of the high standing of the speaker we are content to accept it as referring to legitimate expenditures. But if analyzed in cold blood, what does it signify?

Can the impartial reader be accused of bias if he reads into these words, a suggestion of bribery? If it is an expensive matter to get behind the scenes in official China, and it is essential that the representatives of the Association should know everything there was to know, how otherwise can this be interpreted, than as it reads? All legitimate official information can be readily obtained in regard to contracts, by waiting until such time as tenders are announced, when all competitors will have an equal opportunity. Any attempt to obtain this information in advance by the expenditure of money, for the benefit of the British Engineers' Association is not only immoral and unfair, but a transgression on the rights of others. Only by the bribery of Chinese officials can the Association be kept accurately informed as to all there is to know. Does the British Engineers' Association approve of methods loudly denounced by its organizers and by the British press as peculiar to the Germans, by openly advocating that a bribery or corruption fund is essential to get behind the scenes? We are fully conversant with the prevailing methods of getting on the inside in China as practiced by certain firms and national interests, and to our experienced eye, this can only be construed in one manner.

Are we justified then in assuming that a fund is available for getting behind the scenes in official China? Is it unduly stretching our imagination if we ask if the Political Adviser to the Chinese Government who is also an Honorary Member and alleged Adviser to the Association is the medium through which it hoped to be kept informed in advance of everything that there was to know? Are we justified in assuming that the British Foreign Office the Minister at Peking, and the Consular officials throughout China, who are identified with its work, are cognizant of and approve of the suggestion conveyed in the words of Sir Charles Dudgeon? Mr. Alston, of the Foreign Office, represented the Government at the Inaugural Dinner and must have heard the speech.

Such a thought is, however, preposterous. Yet we maintain in all seriousness that other critics not so friendly would not hesitate to couple these facts together, in the same manner that the British Press throughout the world have unanimously condemned the participation of the German Foreign Office in the scheme of its national organization for furthering German trade abroad.

The Association does not carry on trade or make profits. It is not a commercial body. Its objects are to advance the collective interests of all its members. In reality, therefore, it is a Missionary Society to educate the Chinese to adopt British engineering principles and purchase British machinery, particularly the products of its Members. Why then, may it be asked, are so many agents required to cover the field? How is the money to be expended to carry out this campaign of education? The only legitimate way to attain this end is through schools, colleges and publicity. Agents preaching the gospel of British superior methods cannot hope to make any lasting impression on the mind of the Chinese purchasers of machinery, unless supported by reading matter either in the shape of special pamphlets or the columns of friendly or subsidized newspapers. Let us suppose that an Agent of the Association succeeds in convincing those behind the scenes of the superiority of British principles for any specific purpose. The unsupported claim of superiority is not sufficient. It must be upheld by first cost and efficiency under given conditions. In China, first cost and long credit are usually the tests of superiority. If the agent is unable to quote prices and terms to the prospective Chinese customer, how can he convince him that British goods are the best? If he does quote prices, whose prices will it be? To be honest and fair to all the members of the Association he must be able to quote all the prices of all those who compete with each other. Otherwise his arguments cannot be convincing and lasting for the Chinese customer.

To be successful along these lines the agent must be fully prepared to quote prices on the spot and close the deal, thus carrying on a direct trade. Or, is it the intention of the Association that after all the missionary work has been done and the purchaser convinced and pronounced in his faith in British principles, that the information is to be sent home so that all members can get after the order. Obviously, the manufacturer who has an Agent in China will telegraph to him, and these favoured few will always secure the business, provided, that the German, American or other agent who may follow on the heels of the non-commercial missionary by being able to quote immediate prices and terms, does not obtain the coveted order. Unless the Agents of the Association have some connection with British commercial firms in China, who are on the spot and can quote immediate prices and terms, and strike while the iron is hot, it is difficult to see how their activities can produce practical results. If such connections should be established with British trading firms in China, it is again obvious that this would be unfair to those members not represented here. It is clear then that as the Association is not a commercial one, and not equipped or authorized to close a contract after having paved the way, we must seek for an explanation of their activities, and need of lots of money in some other quarter. Publicity? Yes, this would absorb lots of money, but as yet there is no evidence that money has been expended for this purpose in China. We are compelled to return to the suggestion implied in Sir Charles Dudgeon's speech as to the expensiveness of getting behind the scenes in official China. All of the objects of the Association are not clearly defined in the printed official circulars. To get behind the scenes of the Association one must also refer occasionally to those objects proclaimed in speeches to arouse interest and induce new members to join, and to refer to articles and editorials published in friendly British papers.

The Real Objects of the Association

At a meeting held at Birmingham on May 29th, 1913, in order to induce engineering firms of that city to join the Association, Mr. Douglas Vickers, its President, spoke some very plain truths about its scope and objects. In discussing the best way for British engineers to meet the competition of other countries, and the necessity for combined action, Mr. Vickers said:

"They would be able to urge their claims on Parliament; they would be able to get the support of the British Ministers in China for English manufacturing engineers in China, and other places abroad, and, further, **they would be able to press the British Government to use their best endeavors to get the Chinese Government to appoint to engineering posts Englishmen, rather than Germans or Americans. In that direction there was an immense amount to be done.**"

"The real object of their competitors was to attack China in that way, by getting Germans or Americans as the case may be appointed as advisers and teachers to the Chinese, in order to bring up the Chinese engineer of the future with German and American text books; to get German and American ideas, and finally to work with German and American machines."

"There they thought their Association had a very good field for work. But in China the Association had another field open to it; that of preparing the Chinese Government for the reception of British manufacturers by bringing before them the fact there were great and good manufacturers in this country who could be trusted to supply the best goods the world could make. **They wanted their Commissioner to bring these facts always before the Chinese and get British Engineering Standards adopted.**"

Here then is the "nigger in the wood pile," which explains much that has hitherto been obscure. To replace German and American engineering advisers and teachers by Englishmen; to secure the appointment of British advisers to new posts, and to influence the Chinese to officially adopt British engineering standards and specifications in their railways and other Government engineering and industrial works. These then are the real objects of this missionary association and are worth working for and expending large sums to get behind the scenes in Chinese official life. What would it not be worth to this Association to have the Chinese Government adopt officially the British engineering standards and specifications? Consider how much time and money is expended by the individual manufacturer to have his patent or specialty specified in a public tender, which freezes out all other competition and allows him to make his own price, and we begin to have some idea of the enormous benefit to British engineering manufacturers in general, if their standards are adopted as official by the Chinese Government and specified in all railway, bridge and other important engineering undertakings. **The success of this would mean that the Door of Equal Opportunity would be permanently closed to American and other Manufacturers, especially those of railway and bridge materials.** As there is little fundamental difference between British and Continental railway practice, the adoption of British standards would not debar them from a fair chance to compete, **but the real sufferers who would be driven from the Chinese market, would be the American manufacturers of locomotives, cars, bridges, structural steel, and other American specialties.** So the real aim of the British campaign can honestly be construed as a widespread official conspiracy to drive the formidable American competitor from China, and close the door on him so he can never hope to re-enter. Although from the British viewpoint, it is a very praiseworthy and patriotic action for the official association supported with all the power and prestige of the Government and with the alleged aid of the British Adviser to the Chinese Government, to do all in their power to attain their ends, we may be pardoned if we question the fairness and morality of it all to manufacturers of other nations. The FAR EASTERN REVIEW has steadily fought against great opposition for the principle of fair play and impartial drawing up of specifications for Chinese railway materials until we are disheartened that we will ever accomplish anything. We have persistently contended that the Chinese Government should appoint a commission to devise its own standard specifications in such a manner that the manufacturers of all nations would be placed on a more or less equal footing. But all the opposition to this seems to come entirely from European sources, who still persist in having their specifications adopted in spite of all efforts to secure Fair Play.

Is it fair for us to assume that this is the real underlying motive of this Association?

We are confirmed in our conviction that these are the real objects of the Association as evidenced by the fact that it is not a commercial body and has no authority to trade. Therefore it is a society for the accomplishment of certain specific ends outside of trade. A letter to the editor of "Eastern Engineering"

from the Secretary of the Association dated June 9th, 1913, clearly indicates that its objects are to facilitate and increase the business of British engineering firms by smoothing out some of those obstacles to their trade which cannot be overcome by the individual manufacturer. Reverting to the suggestion implied in the speech of Sir Charles Dudgeon that lots of money would be needed, and emphasizing the expensiveness of getting behind the scenes in official China, and that it was essential that the representatives of the Association should know all that there was to know, it is illuminating to carefully ponder over Article 9 of the Objects of the Association as set forth in its official circular; **"To aid by advice, co-operation, donations or otherwise any individual or concern who is able to promote the objects of this Association."**

Donations to whom? Chinese officials? We understand the Resident Commissioner in Peking has a considerable fund for entertaining purposes. This is legitimate enough, but what about DONATIONS to those who are able to aid the good work? How large a donation would be deemed advisable and appropriate for the well disposed Chinese official who could influence the adoption of British engineering standards and specifications on the Chinese Government railways? SOME donation! Is a donation available for those who can aid in securing the appointment of British Advisers to the Chinese Government? Has not the Association made it possible for the caustic critic to ask the pointed question: Does the Honorary Member and alleged Adviser of the Association indicate the needy officials worthy of receiving a donation in proportion to their ability to advance the special objects of the Association? Or is the word "donations" intended to cover the free equipment of colleges and schools with samples of British machinery and technical appliances and instruments? This legitimate avenue for distributing donations would seem to be covered by the provisions of Article 8. Perhaps Article 9 is merely a repetition of the preceding one and refers to legitimate donations in aid of colleges and schools, or assistance to purely British firms and individuals who would be rightly entitled to receive such aid in return for their patriotic work in advancing the interests of their country. How can we tell what to think? As it is not clearly specified, it leaves a broad construction to be placed on who shall or shall not be entitled to benefit through these donations. We have heard stories in China, of foreign Chinese Government engineers receiving a comfortable monthly allowance or "donation" from trading firms in return for having the specialties of the latter specified by name in public tenders for supplies. Is it fair to ask if something of the same nature is contemplated by the British Engineers' Association through their accredited agents in China, operating with the support of the British Government, and recognized as official by the Chinese authorities?

Appointment of British Advisers

To achieve the ultimate success of their propaganda, it is clear that the road will have to be carefully prepared by the suggestions and counsels of Advisers to the Chinese in engineering matters. At the very outset of the campaign, the Association becomes responsible for and openly indorses the questionable method of influencing the appointment of interested Advisers. This is in strong contrast with American methods in China. Every engineering Adviser selected by the Chinese authorities on the strength of the indorsement of the Association would undoubtedly enter upon his duties with the idea of advancing the interests of those who secured his appointment. The Chinese would accept his services with the feeling that they could rely on his sincerity and impartiality. In reality, they would be paying the salary of a high class expert working to advance the special interests of those instrumental in securing his appointment. In other words, the British program can be construed as encouraging professional men to act in conflict with the code of ethics adopted by all engineering societies throughout the world. It stands to reason that any candidate put forward by the Association for the position of Adviser to the Chinese Government on Technical or Engineering matters, will not receive support unless he has consented to advance the objects and aims of the Association. Therefore any adviser who may receive such an appointment through the agency of the Association must necessarily constitute a barrier to the legitimate rights of other nations to equitable treatment and a fair field for their share of the business. We are not going to labor this point. A campaign which endorses the subversion of professional ethics to advance national or special interests is open to the severest condemnation. The duties of the Resident Commissioner are openly set forth in the official circular as follows:

"To use his influence and that of the Association to secure as far as possible British Advisers and Instructors to the Chinese in Engineering Matters."

What has the Association accomplished to date in this great object? Their last Annual statement is not at hand, but an editorial headed "British Engineering in China" appearing in "The London & China Express" of September 4th, 1914, discloses some interesting information. Amongst other things it tells us that **the British Engineers' Association "is to be congratulated upon having succeeded in obtaining the appointment of a British Engineer as Mining Adviser to the Chinese Government and, we understand, is also endeavoring to secure other kindred appointments."**

So it is clear that the Association has not lost sight of its main objects. They have obtained the appointment of a Mining Adviser and are working to secure other kindred appointments.

THE GREAT OBJECTIVE

What is the great objective of the Association?

Where do they wish to establish exclusive British standards and specifications?

What is the most important field for their activity?

Where can the appointment of an Adviser in sympathy with their aims hope to secure lasting results?

The answer is clearly apparent.

It is only in the equipment of government railways that they can succeed in having British Engineering standards and specifications adopted, as all other openings for machinery are largely a matter of private initiative controlled by the individual option of the purchaser.

It is clear on analysis, that the adoption of British standards and specifications on the Chinese Government railways is the one great purpose of this official association. To achieve success and close the door to others, they must first influence the appointment of a British adviser to the Ministry of Communications.

If the American and other Governments refrain from taking an active interest in this matter, and the British official organization is successful in securing the appointment of their candidate to this post, what will be the ultimate effect on American engineering trade with China? Does not this whole campaign tend to oust American engineering materials, and influence the official adoption of British standards and specifications through the appointment of a British adviser to the Railway Board? Can it not be construed as a deliberate attempt on the part of the British manufacturers aided by the British Government, and supported by the alleged British Adviser to the Chinese Government to close the Door of Equal Opportunity to America?

What can America do to protect her manufacturers from the logical effects of this campaign so openly and strenuously waged, and preserve the market open for her manufacturers? American trade interests will be menaced, as it will be almost impossible to counteract the secret activities of this official Association. The official records of the Association indicate that money is available for advancing its interests, and in addition, it has the powerful support of the British Government and the alleged sympathy and advice of the Adviser to the Chinese Government.

Unless some step to protect American interests is taken it is not difficult to foresee the time when the door will be closed to any further participation of American manufacturers of engineering materials in the development of China. The present situation concerning the tenders for bridges on the Hukwang Railways is an indication of the intensity of the campaign to secure the adoption of British standards in defiance of the Loan Agreement and the Bankers' Agreement which concedes equal right to the four Powers in the supply of materials for the construction of the lines.

RESUME

We have endeavoured to prove by impartial analysis and honest deduction that the aims and objects of the British Engineers' Association if carried to their logical end, must result in the closing of the door of equal opportunity to American manufacturers in China, and pave the way for the creation of trade jealousies and animosities which if fanned into a flame by the same methods as have characterized the campaign against Germany, can only have one ending. It has been necessary for us to make full use and abuse of Dr. Morrison's published connection with this Association, to make clear the full significance of the propaganda in China. It is obvious that an Association numbering amongst its members the most prominent manufacturers of Great Britain, and the most respected and honored defenders of British prestige in China, can not be held responsible for the use of Dr. Morrison's name as Adviser to their Association, at the same time he was occupying the honored position of Confidential Adviser to the Chinese Government. With an intimate knowledge of Dr. Morrison's honorable work as a journalist, we have been convinced that he never consented to such an abuse of his name, and for two years, notwithstanding frequent urging from American and German firms, we have refrained from making any open comment reflecting on his position. We have therefore been constrained to believe that some official of the Association, was individually responsible for this flagrant breach of decorum. Before completing this argument, we determined to write a frank and open letter to Dr. Morrison pointing out fully and fairly the position he was placed in, and requesting him for a frank reply.

For the logical conclusions we have drawn from Dr. Morrison's published connection with the Association as its Adviser' in our efforts to disclose the full significance of its propaganda in China, we tender full and honest apologies. These deductions have been accepted by Americans and Germans cognizant of his alleged connection through reading the various official reports of the Association, and the columns of its inspired organs, and only a full and amply apology published in all the China papers, can assist towards eradicting this erronious impression. As soon as Dr. Morrison's attention was invited to the facts, he at once wrote to the Secretary and Officials of the Association under date of December 16th, ulto., in the following words:—

"Such a description of me, false as your Association know it to be, is seriously prejudicial to my position in China. Your Association know that I have never been an adviser to them in any capacity whatever nor ever had any communication with them other than to ask for copies of their reports to put in my library.

"At the request of my friend Sir Walter Hillier I, consented to become an Honorary Member of your Association. To describe me as an Adviser to your Association while I am in the service of the Chinese Government is an unwarrantable impertinence. I call upon you at once to publish my resignation as Honorary Member of your Association: you will give the reasons for my so doing, and you will state that I never have been an Adviser to your Association, nor ever will be, and that I emphatically protest against such a discreditable attempt to prejudice the position of an honourable Englishman employed under the Chinese Government."

There is nothing further to be said. This just denunciation from an honorable and conscientious gentleman whose reputation has been filched from him by the unauthorized use of his name in such a manner will meet with cordial approval and sympathy from all who know him, and especially from his fellow journalists irrespective of nationality, who take pride in his selection for the high office he now occupies.

We are informed on the highest authority, that the confidential circulars of the Association to members has emphasized the relation of Dr. Morrison to their campaign, as the main support of the Resident Commissioner at Peking. Much advertisement has been given to the alleged results of the propaganda in China, manufactured for the express purpose of enthusing the members and deluding them into a belief that they were really receiving some tangible returns from the expenditure of their contributions. In effect, it may be frankly asked, what results have been actually achieved? *Nothing. Absolutely nothing.* Dr. Morrison, the widely advertised mainstay of the Association has been in blissful and innocent ignorance of his important position, and with this prop taken away, it is clear that the much heralded results are nil. Dr. Morrison asserts that he never mentioned its name once to any Chinese official, nor has he ever heard its name mentioned by any Chinese official. And those who know him, will believe him.

We are also informed on good authority that Mr. Wheeler, the newly appointed British Mining Adviser to the Chinese Government, is also greatly embarassed by the published claims of the Association, that he was appointed through their efforts. We are also very emphatically assured from sources in Peking, that the Association had absolutely nothing to do with Mr. Wheeler's selection, in fact the high Chinese authorities until recently have been totally ignorant of the existence of the Association, and want to know what it is all about anyway. The efforts of the Association to replace German and American Technical Advisers to the Chinese Government by Englishmen, has so far been unsuccessful.

What then has the Association accomplished in China? In spite of all that has been published in inspired and friendly journals in England, from information supplied by the officials of the Association, the cold unpleasant fact remains, that here in China, it has accomplished nothing, and is rarely if ever heard of. The average Britisher accepts it as the usual Association formed for the purpose of enjoying an annual dinner garnished with mutual admiration speeches. It has never been spoken of seriously by any British subject in China, and when discussed at all it is always with an amused interest in what it accomplishes other than finding employment for a salaried staff, who must bolster up enthusiasm by glowing reports of its work. We may state quite frankly that the open publicity given to the objects and aims of the Association have placed all other nations on their guard, and whatever chance there might have been of attaining its special ends, has now been destroyed. The mere fact that a candidate for the position of Adviser to the Chinese Government on technical matters is indorsed by the Association, is sufficient to nullify his chances of appointment. The Chinese will have none of him, as he comes to them as an advocate for the advancement of special interests.

What is the position of the British Government in all this? Has the Association stopped to consider that every mistake reflects on the honor of the Government? The British Government is undeniably compromised, through the wide advertisement extended to its recognition and support to their campaign, and therefore becomes at least indirectly responsible for its activities.

We are now going to hazard our honest opinion that notwithstanding the wide publicity given to the official support and recognition tendered by the British Foreign Office to the Association and its propaganda, that the British Government has also remained blissfully ignorant of the undignified and scurrilous campaign relentlessly waged against Germany and America with the advertised stamp of its official approval, and, that in justice to the outraged feelings of those who have been insulted, it will feel in duty bound to publicly disavow any further connection with its purposes, and defend its reputation by repudiating any knowledge of its past work.

When the British Government is fully informed that the selfish campaign of one Mr. Stafford Ransome, is responsible for the retaliatory attitude of the French Government, French financiers and manufacturers, it will then open its eyes to a realization of how great is the damage done to British prestige in that quarter. For we are in a position to authoritatively and positively assert that in retaliation for the patriotic British program of the British Engineers' Association, the French Government, early in 1914, was compelled in self-defense to enunciate a new financial policy; that in the future, French loans must be employed for the special advancement of French political and commercial interests abroad, and French materials must be specified in loan agreements, and, furthermore,

owing to the repudiation of an official agreement by the British representative of a joint Anglo-French financial corporation, where the equal rights of the French partners were deliberately ignored apparently with the full cognizance of or negligence of the British authorities, the French Government decreed that in the future French financiers and contractors should be prohibited from entering into similar combinations for construction work abroad. We have full knowledge of, one specific instance where this new doctrine of the French Government was immediately enforced to terminate a long standing and mutually profitable combination of large French and British interests operating in foreign fields. The financial loss to the British manufacturing engineers in this one instance alone was greater than any of the alleged advantages reported to have been gained in China. The Association of French Manufacturers in a meeting held last spring, also passed unanimous resolutions that in future French loans must be employed to advance their special interests, and called on the French Government to formally adopt and carry out this policy. If we stop to consider that many large loans and new issues floated on the London market, as purely British transactions, owe their success to the friendly participation of the French bankers, we can begin to understand the reasons which influenced the French Government to resent the selfish policy of the British Engineers' Association, with its hall marks of Government approval. How many loans for the political and industrial advancement of Great Britain in foreign lands, owe their successful floatation to the sympathetic co-operation of the French banks, and in how few instances can it be truthfully said, that any consideration was ever extended to French industries by the British officials in charge of their expenditure. Not only have French manufacturers been rigidly excluded from any benefits arising from these loans, but we can point to instances where the British Consulting Engineer has strongly condemned the quality and use of French materials in enterprises registered as British, but in reality French. British industrial advance owes more to France, than the manufacturers will ever appreciate. Only the inside ring of international financiers have a full appreciation of what the French money market has done for British trade. The war may wipe out the feeling of resentment, and the French may again harmoniously co-operate with the British banks, and overlook the past,but if they do it will be traceable to a pure sense of gratitude and good fellowship for their Allies, and not because they approve of British methods. These are straight truths, which the misguided agitators in England may well ponder over. A very little investigation amongst the interested high financiers and manufacturers in France will testify to the truth of the above statements. The French policy was quietly adopted without any of the publicity accorded to the British program, and as they have a way of pulling harmoniously together for the national welfare that is unknown in Great Britain, they can accomplish results that are impossible to attain in other countries. The French Government's absolute control of the Bourse and new issues, enables them to rigidly enforce any program they decide is best for France, and unless the war compels a modification of the present attitude, the future will show that the British Engineers' Association, has caused more harm to its national interests than good. In fact, it were better if it had never been born.

The French have good naturedly poured out their wealth in the past without any demands for "indispensable" terms, supervision of expenditures or stipulations for the purchase of materials for their manufacturers. They have co-operated fraternally with other interests, and invariably they have been frozen out of the commercial pickings. Their experience in China has taught them a severe lesson, and in the future, when the French bankers are approached to underwrite any proportion of a British railway or industrial loan for this country the French Government will see to it that French materials are purchased in exact proportion to the amount of the loan subscribed for in that country. And to this equitable demand there can be no honest objection. British money will be used to purchase British material and the French financial participation will demand the same privilege, or the British will have to find all the funds themselves. So it is seen that the selfish demands advocated by Mr. Stafford Ransome have firmly closed the door to further French financial aid, unless the latter are accorded proportionate participation in the supply of materials. No more will the British financial institutions unload half their issues on the French market, and selfishly ignore the rights of French manufacturers, and if British interests suffer, they can thank the Secretary of the British Engineers' Association for curtailing their activities. There were other important reasons which determined the French Government to modify its financial policy, reasons already briefly referred to, and having a direct bearing on the re-establishment of the Spheres of Influence in China, which will be discussed in their proper place.

We ask all honest Britons to give careful consideration to these facts. We have not drawn on our imagination, but have a personal knowledge gathered at first hand in Paris from those most deeply interested. If the campaign of the British Engineers' Association, aggravated by the sharp practice of the agent of the British official railway organization in China, determined the French to take effective steps to defend their own interests, can anyone conscientiously denounce the Germans, if they too felt compelled to take the same measures of self-protection against the operations if the British Association? The virulent campaign against Germany, commenced with the appearance of "Eastern Engineering" in 1910, receiving impetus through the incorporation of the British Engineers' Association and the appointment of Mr. Ransome to the position of its Secretary, in 1912, and then assumed international prominence through the widespread publicity given to the official approval of the British Government to the objects of the Association. If the French Government and its financial and manufacturing concerns deemed it essential for the preservation of their combined political and commercial interests to quietly adopt retaliatory measures early last year, does it not signify that the loudly denounced scheme for the similar advancement of German trade abroad, might also be traceable to the desire to defend itself against the implacable, unreasonable and undignified campaign conducted by the secretary of the British Association? Sir E. Goschen's first report on the German scheme transmitted to the British Foreign Office bears the date of February 27, 1914, clearly indicating that the German and French Governments determined to adopt the same policy at about the same time. The German scheme was devised four years after the opening of the British attack on their methods, and two years after the reported formal alliance of the British Foreign Office with the British Engineers' Association. And yet in the face of these positive facts, a unanimous British press has virtuously denounced the German scheme as highly immoral, and asks the world to accept their biased viewpoint. If the full force of the British campaign had been directed against Americans, the latter would never have waited for over two years before adopting measures of defense, and if they had become convinced as the Germans did, that the entire weight of the British Government was behind the British campaign to eliminate them from the markets of the world, well, all we have to say, that knowing the temper of the American people, they would have demanded an immediate explanation, through their Government, and, failing to receive a satisfactory reply, no questions of ethics or morality would have deterred them from protecting themselves by every means within their power, and girding themselves for the inevitable life and death struggle, against an unscrupulous enemy.

If we recognize that Britain already owns as much of the earth as she can safely govern, and that the most valuable markets are under her undisputed control, and we accept the fact that the one rich field open to the equal competition of all nations, is China, and, if we remember that Germany's colonies are poor and thinly inhabited by aborigines with primitive wants, it is clear that the most important field left in the world where German trade can be profitably advanced is centered in the great undeveloped but potential markets of China. By a process of elimination of other fields, an analysis of the possibilities for any great expansion in the world's trade, conclusively designates China as the present and future strategic battlefield for commercial supremacy. Any open campaign which has for its objective the elimination of influence, and the unrestricted right of any nation to conduct business along the only lines open to legitimate competition, must be accepted by spirited people as a direct menace to their national existence, and if persisted in, can only be solved by a resort to arms. The political strategics involved in the issues between the warring nations have obscured

the fundamental principles at stake. The neutral nations are invited to assimilate the mass of conflicting official statements, and asked to believe that Germany alone is guilty for this horror of the Ages. For the political events which precipitated the war, Austria, Germany and Russia must assume full responsibility at the bar of the world's judgment, but for those deeper commercial forces which unconsciously create and intensify national hatreds, and sooner or later drive a maddened and goaded nation to desperation and compel it to strike blindly with all its power to save itself from extinction, for these provoking influences, are critics justified in asking, in the face of overwhelming proofs, if Great Britain is not largely responsible?

We have seen the germ of jealousy grow from the warped brain of a misguided and uninformed journalist, and blossom out into a bitter, vindictive and implacable campaign, using as its weapons calumnies and misrepresentations and as its battle cry, the "Elimination of the German Blight." Around the standard of this narrow minded patriot, gathered the cohorts of British industrialism, under the full official sanction and approval of the British Government. German competition in China must be wiped out, and the campaign was launched to oust her from this field where she had an even chance to compete and expand. The denunciation of German methods coming from those whose tactics in China are equally open to just censure, and the tenacity of purpose to prejudice the Chinese mind by the most unfair criticisms and comparisons; the proclaimed intention to replace all German Advisers and instructors by Englishmen, all slowly served to delude them into the firm belief that a widespread British conspiracy in which Government, Commerce and Press were united, had been set in motion to destroy the fruits of their long, hard years of patient application to business in China. The British Government may honestly disavow any connection with the aims and objects of the campaign, and the Association may as honestly repudiate the policy of the bloodthirsty journal linked with its work, and the world will accept their statements, but it is too late. The damage has been done. They must go on with the butchery, forward with the carnival of blood and the orgy of death until a broken nation cries out in agony for quarter. If Germany is guilty of precipitating this horror, there are powerful interests in Great Britain who cannot hide behind the skirts of outraged Belgium, to escape from the charge of driving commercial Germany to the verge of desperation and provoking her into hostilities.

There are many events connected with this phase of the issue, which the Blue Books and similar official publications fail to disclose. The reader will find no reference to China in any of these documents, but the question of the Open Door and the right of equal opportunity to trade in China, is as much a part of this war as the integrity of Belgium, or the independence of Servia, and in due time this side of the question will receive full prominence, and will have to be squarely faced by the great European Powers if the world is to have lasting peace.

With a desire to take the construction of all future railways in China proper, out of international politics, and concede equal participation to the four great manufacturing and lending nations in the development of the country, the Chinese Government early last year determined to organize an International Construction and Finance Company to put these ideas into practical effect. A national scheme of railways calling for the construction of 10,000 miles in the next ten years was designed to be equally divided between Great Britain, France, Germany and America. The plan as designed and developed was immediately accepted and approved by the leading construction firms, fully supported by the strongest financial institutions in their respective countries.

The Company was organized in Paris in April last, the Chinese Government receiving the most favorable terms ever conceded to her in railway work and establishing new principles in financial control and recognition of her sovereign rights and the honesty of her financial institutions. Complete harmony and mutual understanding prevailed between all parties, and the essential basic points were amicably agreed to. In effect, it was a complete success and a signal victory and advance for China, as by the elimination of all politics, terms were secured that had been previously vigorously opposed by the official groups. As the French and German official financial groups were standing behind their participants in the new proposition, it is a clear indication that they were willing to concede terms other than those deemed "indispensable" by the British Government and its official financial organization. Each country would have received equitable and honorable consideration in the development of China, and the Central Government would have been relieved of the constant pressure and demands for special railway concessions, and permitted to concentrate its energies to the reconstruction of the country. The neutralization of China would have been guaranteed, and its integrity assured during the critical years when the people were undergoing the process of political evolution, and the harassed Government was consolidating its power and bringing the discordant elements into harmony.

What then caused the collapse of this scheme? There were two causes, but the first and most serious bar to its success was the unbending attitude of the British Foreign Office. It said in effect, "We recognize the International Construction Company in principle, but all railway lines which traverse or encroach on the Yangtsze Valley, must be built by the British participant in the Company, and, furthermore, before we can give our support to the scheme, the Chinese Government must approach us through the regular diplomatic channels, and submit the scheme for our approval." In other words, the British Government reserved to itself the right to supervise and approve any national railway scheme for China, and coldly applied the doctrine of the Spheres of Influence, and rejected the principles of the Open Door. As Germany refused to be bound by a "scrap of paper" in regard to Belgium, so Great Britain went back on her pledged word to respect the rights of all nations to equal opportunity in China. The right of Germany and America to participate in any future railway construction in the Yangtsze Valley was ignored. Germany could still retain her footing in Shantung, but America was frozen out in the cold. These facts were duly transmitted through the German and American participants to their respective Governments. The original guardians of the Open Door, who for thirteen years had faithfully fulfilled their trust, however, had been relieved from duty, and their place taken by disinterested and high principled officials who trusted to the binding power of a "scrap of paper" to protect American interests in China. So the American Government did—*nothing*. The German authorities however were deeply concerned, and saw in the attitude of Great Britain only another proof that the door in China was to be effectively closed to further participation in railway development, and that they were to be confined to the Province of Shantung, while the great rich and productive sections of China were to be reserved for exclusive British exploitation. As the British attitude lacked official corroboration, the German Government had no diplomatic excuse for requesting a formal explanation, and owing to its exclusive policy in Shantung had no moral right to enter such a protest. In the meanwhile the murder of the Austrian Archduke occurred, and the evidence implicating Servian officials rapidly accumulated, which set all Austria afire with the passion for revenge. And at this critical juncture, the British Foreign Minister was compelled to openly indicate his policy towards China, in answer to questions in the House of Commons on July 10th., ulto.

"We have not got any special title to the Yangtsze, except that we have already got vested British railway interests in that region, and we hold that we have the right further, to develop railways in such districts, and that new railway concessions ought to be British Concessions."

There are other parts of his speech which indicate that Sir Edward Grey, was honestly endeavoring to find some solution to the perplexing problems surrounding railway construction in China. The problem had been equitably and honorably solved, conceding to British interests all their rights under the Open Door declarations. but the Foreign Office had rejected it a month previous, and at that time held out for exclusive British control in the Yangtsze Valley, and the above quotation from his speech on July 10th, would tend to confirm that he had no intention of deviating from this set policy. If the British Foreign Minister expressed the idea in London that new railway concessions in the Yangtsze, *ought* to be British, it is fair to assume that every means will be taken so that they *shall* be British.

If we now add this fact to our long list of previous

provocations, it is not difficult to honestly imagine just how this speech was received in Berlin. This enunciation of policy absolutely destroyed any lingering hope that the principles of the Open Door would be adhered to by Britain in the future and that the same rigid exclusion enforced by Germany in Shantung would henceforth apply to the Yangtsze Valley. America who was most deeply concerned, although fully informed as to the trend of British policy, made no move to request an explanation. The Door had been closed in her face with a bang and a peace loving Secretary of State on whose shoulders rested the responsibility of guarding the Door, refused to take notice and went ahead preparing his twenty second peace treaty. Disinterested and prosperous America could afford to ignore her exclusion from China, and see her place as guardian of the Door, taken over by vigilant and agressive Japan. American manufacturers do not need the Chinese market—not now. We sacrificed our national honor; but what is honor amongst friends anyhow.

These are facts that have been hidden by both sides. As people gather the full meaning of all that these truths bring home to their minds, there will have to be a readjustment of opinion.

What do all these truths convey to us? What is the great fundamental principle involved in this epoch making war of the nations? The chastisement of Servia, and the integrity of Belgium all fade into insignificance before the vital, all important basic commercial issues. And although Germany created the precedent in Shantung, and has violated the spirit of the Open Door agreements, in her rigid exclusion of other interests, Americans will feel deeply for her, for it is logical to deduce that just so sure as Germany's commerce is destroyed and her industries wrecked, just so certain will the campaign of hate be turned on America as the next formidable competitor, and despite the ties of blood, and all that we hold most dear, the unappeasable, voracious forces behind the mighty Moloch of British industry, will demand our sacrifice on the altar of their trade supremacy with the same vengeful spirit that is now shown towards Germany. If Germany has erred, so Britain has also sinned. There is no palliation for either side. The way towards peace, is now blocked by the lust for revenge. Germany may be defeated, but the German people cannot be exterminated. The women will remain and will breed sons, the land will be there, and the factories will again hum with the noise of industry. The Germans under any Government will have to live and be permitted the right to compete, and the same qualities of application to work, and the readiness to meet changed conditions will again bring their just rewards. If British writers can desist long enough from their denunciations of German culture and barbarism, and let this thought seep into their minds, and that under similar conditions any other nation would strike blindly to save its commerce from extinction, then perhaps the road may be opened for the declaration of a truce and a discussion of terms of peace. As long as Britain deludes herself and the rest of the world that she alone is the injured party in this war, the dawn of peace will be indefinitely delayed. A mutual understanding of each other's rights is essential before overtures for peace will receive consideration.

This may all prove very disagreeable reading for honorable Britions, but we feel that the truth must be told by some one, and as British writers and the British press are prohibited from a discussion of these fundamental and self-evident facts, the obligation to undertake the unpleasant task devolves upon some friendly American writer. We may be misconstrued and maligned, but we rise above the petty criticism of the bigoted partisan, and appeal to that broad spirit of fair play inherent in the character of the common race. The lives of the best and noblest of Europe are paying for the terrible mistakes of the last decade. Hunger, privation and misery have befallen countless thousands of innocient victims, the national life of Belgium has been extinguished and her peoples scattered broadcast over the world to subsist on the charity of strangers, and it all fades into insignificance before the toll of blood that must yet be exacted, with its aftermath of misery and broken hearts. And with this vision of desolation before us, we again proclaim that we cannot remain mute and disinterested, and permit the campaign whose end is death, to be turned on America, and calmly watch the sapping of Anglo-American friendship, without making one supreme appeal to reason.

There is only one road open for the common race to travel; the broad path of friendly understanding and harmonious intercourse, that leads to permanent peace and good will. If this goal is to be reached, and the world saved the horrors of another crime against humanity, then, Britain must stand shoulder to shoulder with her kindred on the other shores of the Atlantic and play the game in China and elsewhere according to the rules on which our common civilization is founded. Americans can tolerate and overlook any infraction of these rules from other peoples, but they expect and demand from their own kind, a rigid and uncompromising adherance to those ethics and codes of honour which have made us both what we are. Americans will never again go to war with Britain, but there can be a loss of sympathy and respect, which would cause as much commercial injury as though the armies and fleets of both sides were busily engaged in cutting each other's throats. And so with this knowledge, we feel justified in making our appeal to reason. If we be misinterpreted, and find it impossible to continue the publication of an honest and independent newspaper, and that we are to be penalized by the withdrawal of advertising support, for our frank exposition of these fundamental truths and uncontrovertable facts, then we will gladly accept the situation, and return light-heartedly to the farm, conscions of having been true to our principles and the higher code of journalistic ethics which inspires our work.

G.B.R.

EDITORIAL: LONDON AND CHINA EXPRESS

September 4, 1914

BRITISH ENGINEERING IN CHINA

We are glad to learn that, in spite of the great national crisis created by the war, the British Engineers' Association is pursuing its activities with unabated energy. As our readers know, the Association is an organisation formed with the object of overcoming by collective influence the serious and growing obstacles which tell against the interests of British manufacturing engineers —obstacles which the individual firm, however powerful, cannot hope to overcome. It has an immense field for its operations in China alone, and it is to that country that its members are first turning their attention.

We may remind our readers that, in addition to establishing its head-quarters in London, it has sent out to China a Chief Commissioner and an engineer assistant, who actively investigate and report weekly to the Association as to possibilities of suitable contracts and what should be done in the best interests of members. The Chief Commissioner is in frequent communication with the British Legation in Peking, and has already, it is claimed, done much valuable work.

In another matter, too, the Association is to be congratulated upon having succeeded in obtaining the appointment of a British engineer as mining adviser to the Chinese Government, and, we understand, is also endeavouring to secure other kindred appointments. All this is excellent work, and it is laying the foundation for important engineering business with China when the time is ripe. Those who till the ground and sow the first seeds will reap the harvest. With a settled Government in China immense possibilities for trade will be opened up in that vast kingdom, and particularly in the engineering branches. There is no reason why British engineers should not receive a large share of this business. The British Engineers' Association should help them to this end, and therefore should receive their hearty support and co-operation. By its powerful organisation it can get into touch with channels of business which would otherwise not be obtained by its members, and we believe it has already arranged that materials and machinery for certain large contracts shall only be purchased from its members. Finally, it should be borne in mind that it has established cordial relations with the Foreign Office, and has obtained support collectively which it was previously impossible to extend to individual manufacturers. There are, we need scarcely say, keen competitors in the field for the trade of China, and British merchants and manufacturers would do well to leave no stone unturned which will enable them to secure their fair share. What the effect of the great European war will be upon some of those competitors it is too early to speculate yet, but this much may be said, that when peace is once more restored the opportunities for trade should be greater and not less.

THE OFFICIAL CIRCULAR OF THE BRITISH ENGINEERS' ASSOCIATION

JUNE, 1913

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COMMISSIONER IN CHINA:

Captain T. C. Fitz-Hugh, M.V.O.

SECRETARY:

Mr. Stafford Ransome.

The Honorary Members:

Mr. Byron Brenan, C.M.G., *Late Consul-General in China.*
Sir Charles Dudgeon, *One of the Commissioners for the Revision of Commercial Treaties with China.*
Sir Charles Eliot, K.C.M.G., C.B., LL.D., *Vice-Chancellor of the Hongkong University.*
Sir Walter Hillier, K.C.M.G., C.B., *Late Adviser to the Chinese Government.*
Mr. Claude Kinder, C.M.G., *The creator of the Chinese Railway System.*
His Excellency Sir Frederick Lugard, G.C.M.G., C.B., D.S.O., *Governor of Nigeria, and formerly Governor of Hongkong.*
Dr. George Ernest Morrison, *Newly appointed Adviser to the Chinese Government.*

The Necessity for the Association.

The British Engineers' Association is an organisation formed for *overcoming by collective influence the serious and growing obstacles which tell against the interests of British manufacturing engineers; obstacles which the individual firm, however powerful, cannot hope to overcome.* The immediate attention of the Association is devoted to China.

The vital necessity for a great national Association with these ends in view is generally recognised by manufacturers and others who have a knowledge of China. The greatest of all engineering authorities on this subject, Mr. Claude Kinder, C.M.G., the founder of the Chinese Railway System, has expressed his views in the following letter addressed to the Secretary of the Association:—

KELVIN, FLEET, HANTS.

October 5th, 1912.

DEAR SIR,

As I understand that your Council wish to have my views on the subject of the British Engineers' Association, I will speak very frankly on the matter.

I have followed the evolution of your scheme ever since I read the article in *Eastern Engineering* early last year which gave birth to it, and the movement from the start has had my sincere sympathy. In fact, the only objection I have to the Association is that it was not started twenty years ago.

I look on an Association of the sort not merely as an advantage to the British manufacturing engineer, but a **dire and urgent necessity.** For his foreign competitors are not only infinitely better organised than he for dealing with Chinese contracts, but they have shown a faculty for grouping their interests and systematically tackling the Chinese market that British firms have been curiously reluctant to adopt. And yet **nothing but an intelligent co-operation between them to overcome the forces arrayed against them can possibly save the situation.**

Our British engineering firms are always slow to move, especially when it is a question of a combination of interests in any way. But, speaking as one who has had the welfare of British engineering in China at heart for over thirty years, I can only say that unless an effective Association is brought about to combat the severe and growing difficulties, **we shall, in a few years, find business in that country either impossible to get or not worth having,** which amounts to the same.

It is a great satisfaction to me to find that you have got many engineering firms into line on this subject, but if you are to be really powerful, you require four or five times as many Members as you have to-day.

I consider that it is not only advisable for all reputable British engineering firms to back this movement, but that **it is their duty to do so on common sense as well as on patriotic grounds.**

Yours faithfully,

(Signed) C. W. KINDER.

The opinions of Sir Walter Hillier, Mr. Byron Brenan, Mr. Douglas Vickers, Sir Charles Dudgeon and others on this subject will be found in the speeches at the Inaugural Dinner on pages 22 to 37.

The British Position in China.

Before giving particulars of the constitution of the Association it is well to review briefly the situation in China which has caused its formation.

The Value of China as a Market.

For some years, in spite of the powerful reactionary influences which existed in China until the recent revolution, the progress in that country, and consequently the demand for engineering plant, has been growing with extreme rapidity.

Without going into details, it is well to state the fact that, while Japan, usually cited as the most rapidly progressive country in the world, took thirty years to build 3,000 miles of railway, China has during the last twelve years built no less than 5,000 miles.

Naturally Chinese imports all round have increased very rapidly. During 1910, which was the last complete year of China under the old régime, they were just over £62,000,000 a rise of more than £12,000,000 over the previous year, and £15,000,000 more than Japan's imports for the same period, though 1910 was a record in Japan.

In the year 1911, in spite of the dislocation of trade due to the revolution, the imports amounted to well over £63,000,000.

Chinese engineering imports during 1910, that is to say, *goods which would fall within the range of firms who are eligible for membership of this Association*, were about £10,000,000. Of this total the British share may be put approximately at rather over 40 per cent.

In 1911 they rose to £11,800,000.

China, however, is merely at the beginning of her career as an importer of machinery. With her population of something like 450,000,000, *i.e.*, nine times the population of Japan, and perhaps a hundred times the natural resources of that country, possessing a people in whom the business instinct is ingrained, there is no doubt that under the new régime, whatever form that may take, machinery requirements will undoubtedly expand, for the Chinese will be able for the first time to give free vent to their progressive tendencies. From this it is reasonable to suppose that China will become one of the greatest oversea markets for engineering plant.

A Comparison Between China and Japan.

China to-day, so far as her knowledge of engineering is concerned, is very much in the condition of Japan some thirty-five years ago, but the position of the British engineer in China is by no means as strong as it was in Japan at that period.

In dealing with Japan in the early days British engineers had an immense advantage over all their competitors. This was due to two causes: (1) Japan selected and paid for her own advisers and instructors and financed her own industrial enterprises. (2) She selected, as far as engineering was concerned, British advisers and instructors in nearly every case.

Thus the early Japanese engineers were not only thoroughly imbued with a predilection for British plant, but their engineering education was all absorbed on British lines. The intimacy between the Japanese student and the British professor not only accentuated that leaning towards British products in the early days, but its influence has continued even to this day, though the Japanese now consider that they are no longer in need of European advice.

In China matters are on quite a different footing. There are some eight nationalities vying with each other in lending money to China for industrial enterprises, and clamouring for industrial concessions. Out of these countries Great Britain is the only one who does not couple with her financial assistance some stipulation as to a *quid pro quo* in the way of contracts from China, or that engineers of that nationality shall be employed in connection with the undertaking for which the money is found. China is thus forced to take her advisers from the countries who lend her money except when Great Britain is the lender, and the result is that British influence is being ousted.

Diplomatic and Consular Conditions.

The foreign diplomatic and consular services in China in every case, with the exception of the British, are leaving no stone unturned to force the trade into their own respective countries. The British Government has been proverbially apathetic on this subject. It is true that of late years it has gone to some trouble to issue reports more systematically and of a better quality than in times gone by, but the organisation for collecting information, though expensive, is still less effective than that of other Powers. Thus Britain's foreign competitors are better informed. The Government, however, is giving its support to this Association in carrying out its objects in China.

German and American Influence on Chinese Education.

Britain's two strongest competitors, Germany and the United States, are making a very serious bid for the education of the Chinese engineer. The Germans, with their model dockyard at Tsingtao, have properly organised engineering works where young Chinese are encouraged to attend and learn thoroughly, not only the German language, but engineering and dockyard practice, and large sums of money are expended in bringing to Germany the right class of Chinese for their engineering training.

German manufacturing engineers on their own account have an Association for dealing with their over-seas interests by means of a resident Commissioner with suitable offices and staff, and have subscribed large sums for the purpose of creating three purely German engineering schools in China. These schools are to be effective nurseries for the German machinery trade. German diplomacy, too, has succeeded in introducing the German professorial element very largely into Chinese native schools.

The Americans have gone a step farther. They waived a portion of their war indemnity against China after the Boxer rebellion on the understanding that the money should be spent in sending over the right class of Chinese to the United States for the purpose of theoretical and practical education.

Both the United States and Germany have their own journals catering for Chinese requirements, and in them engineering and industrial matters generally preponderate. One of these German journals has an English title, and is printed throughout in English.

Thus on the one hand the G rmans are spending large sums of money to create and foster a knowledge of the German language by their technical schools, and on the other are utilising the English language to secure trade pending the realisation of their scholastic ideals.

The Banking Facilities of other Nations.

The German, the American, the French and the Belgian banks are all strengthening the hands of their respective manufacturers in every way. They give facilities for financing large contracts which are unobtainable by British firms from their own bankers, and which constantly tell against British chances of business. One of the most serious results of this policy is that often by the time the British manufacturer hears that an order is to be placed and is offered an opportunity to tender, the whole matter is cut and dried, and the fact that the contract is to be placed with one or other of the foreign firms is a foregone conclusion.

The Association and the Merchants.

It is only natural that in an Association, the fundamental principle of which is that it represents manufacturers only, merchant firms cannot be eligible for membership. The Association, however, fully recognises the valuable and essential part played by the merchants in China and elsewhere in the conduct of successful engineering business, and attaches great value to their sympathetic co-operation with its members.

It should be clearly understood, therefore, that it is no part of the business of this Association to work against the merchants or to interfere with their trade or to discourage its Members from dealing with them. The great object of the Association, in fact, is to increase the trade between China and Great Britain, and thus to strengthen the relations between the merchants and the British engineering firms.

The Influence of the Engineering Industry.

There is an immense amount of dormant influence in the engineering industry of this country, comprising as it does firms with a collective capital the magnitude of which can be gauged by the fact that the wages paid in this industry amount to over £100,000,000 annually. Such an industry, if adequately organised for the purpose of overcoming the obstacles which

stand in its way, possesses the power to advise the Government authoritatively on matters which concern engineering interests and to insist on those interests being raised above the sphere of Party politics.

In like manner it has the power to insist on fair treatment from the banks, the shipping and railway companies and others whose existence is largely dependent on the patronage of the engineering industry. *Until now this great power has never been made use of for the purpose of increasing British engineering business.*

It is the purpose of the Association to transform that dormant influence into an active force to be utilised not for the benefit of any individual manufacturer, but for that of the British engineering trade as a whole so far as it is represented by the Members of this Association. Consequently, it is to the direct interest of every bona fide manufacturing engineer or maker of engineering accessories to join this Association and support it in every possible way.

The Position of Large and Small Firms.

Certain firms have expressed the opinion that the larger firms will reap a greater proportionate advantage from this Association than others, but such is not the case. It is only natural that those firms who spend a great deal of money in China, and either possess their own branches or representatives, should profit thereby. But the smaller firms who have no such arrangements will, by joining this Association, have the inestimable advantage of gaining a knowledge of the conditions of trade in China, and, either in conjunction with other firms or otherwise, will be in a position to secure trade which they cannot hope to get without joining the Association.

The fact that a firm does no direct trade with China makes it none the less necessary for that firm to join the Association. The best means of securing indirect trade with China is to assist those British firms who are endeavouring, through the Association, *to secure the trade for this country.*

It is in order to give all eligible firms an opportunity of joining that the annual subscription has been placed at a low figure.

The Scope, Objects and Constitution.

Incorporation under a Board of Trade Certificate.

The Association was formally incorporated on April 26th 1912, under a license from the Board of Trade, and is now carried on under the Companies Consolidation Act, 1908. Consequently the liability of its members is limited. It is not a trading or profit making concern and the privileges of all its members are identical.

For the time being the Association's attention is directed exclusively to China, as that country is the one where British engineering interests are threatened more than in any other. But as soon as the membership warrants it, the Association's influence will be extended to other parts of the world where British engineering interests are menaced.

In order to avoid conflicting interests the membership is strictly confined to actual manufacturers. *The Association is unconnected with any business concern.* Its policy is to promote the interests of its members as a whole, and *not to interfere with their existing business arrangements in any way.*

Official Recognition by the Foreign Office.

The Association received the formal recognition of the Foreign Office on December 20th, 1912, and its status is recognised by the Chinese authorities *The British Minister in Peking has been instructed by the Secretary of State for Foreign Affairs to give his official support to the Members of this Association who may be travelling in China, and to instruct the British Consuls throughout China to do the same.*

The Official Design.

The distinguishing design or "chop," reproduced below, has been adopted by the Association, and lodged with the Consul-General in Shanghai. It is used by members of the Association in connection with their Chinese business for purposes of identification, either on their letter paper, or visiting cards, or as name plates on their machinery. It rests with the Members of this Association to cause the Chinese to regard this design as a guarantee of good quality as well as of the British origin of the machinery on which it appears, and of fair treatment by the firms who use it.

The Chinese characters in this design represent the equivalent in Chinese of "The British Engineers' Association." Written and pronounced in English the Chinese title is "Ying Kuo Chih Tsao Shih Hui."

The Governing Body.

The Association is governed by a Council consisting of a President, five Vice-Presidents, and not less than fifteen or more than thirty ordinary members of Council, elected annually from all the members of the Association.

An Executive Committee carries on the active business of the Association. The Executive Committee is elected by the Council from among its own members.

The Association is fortunate in having seven of the most eminent living authorities on China as Honorary Members and ADVISERS.

The Association's Work in China.

The work of the Association in China is carried on by a resident Commissioner or official representative. His head-quarters are in Peking.* He is in close touch with the other business centres of China by frequent personal visits and through the agency of correspondents in such places.

The filling of this position required a great deal of care on the part of the Council, as it was essential that the Association's Commissioner should not only have a thorough knowledge of the Chinese language and methods, but should also be intimately acquainted with high Chinese officials and with the officials of the British and other Legations. The Association has been fortunate in securing the services of a gentleman who possesses these qualifications in a high degree.

The duties of the Commissioner may be classified in the following manner:—

(1) To gain an inner knowledge of all those matters which affect British engineering interests and to keep the Association promptly and accurately informed on these subjects.

(2) *To use his influence and that of the Association to secure, as far as possible, British advisers and instructors to the Chinese in engineering matters.*

(3) To know how contracts are to be given out and to influence buyers in favour of Members of the Association.

(4) To get the names of Members on the Government and other lists in connection with contracts.

(5) To make it clear to the Chinese purchasers that they will be treated fairly by Members of this Association and that its Members are capable, between them, of supplying *everything* in the way of engineering plant that China may require.

(6) To make full use of the fact that the Association is formally recognised by the Foreign Office.

(7) To introduce Members who may be travelling in China to officials or any one who can help them to secure business.

(8) To be constantly on the look-out for young Chinese who are destined to be engineers and are likely to occupy good positions so that they can be trained under British influence either in China or Great Britain.

The Commissioner is not entitled to give any advice or assistance to any one, even if an applicant for advice purports to be the agent or representative of a Member, unless he possesses credentials from the Association.

The Objects.

The objects for which the Association is established, as set forth in the Memorandum of Association, are:—

* The Commissioner, who is at the present time (April, 1913) on a visit to England, will return to China in the course of a few months.

(1) *To promote and protect the general interests of British manufacturing engineers.*

(2) *To consider all questions connected with such interests.*

(3) *To promote or oppose legislation and other measures affecting such interests.*

(4) *To collect and circulate statistics and other information affecting the general interests of British Engineers and to diffuse amongst its members information on all matters affecting such interests.*

(5) *To support the British Government, bankers, financial corporations, shipping and railway companies, and any other organisations in promoting the general interests of British manufacturing engineers.*

(6) *To watch and report upon the methods and progress of foreign competitors in Asiatic and other markets and to suggest methods of counteracting foreign influences.*

(7) *To encourage the predominance of British technical instructors in Asiatic and other schools.*

(8) *To encourage technical colleges and schools in Great Britain to give facilities for Oriental and other students, and to establish or aid in the establishment of technical schools abroad for the furtherance of the objects of this Association.*

(9) *To aid by advice, co-operation, donations or otherwise any individual or concern who is able to promote the objects of this Association.*

(10) *To invite members of the Association to give facilities for the introduction into their works for varying periods of Oriental and other engineers or engineering students.*

(11) *To endeavour to make the English language the recognised medium for the transaction of all engineering business.*

THE FUNDS.

The funds of the Association are derived from the subscriptions of members and entrance fees. The first 200 members will be admitted without an entrance fee.

The annual subscription for the time being has been fixed at Ten Guineas, which it is estimated will provide the funds necessary to enable the Association to carry on its work efficiently.

Of the first applicants for membership, *two hundred "Original Members," taken in the order of the priority of their application*, have the advantage of securing full membership from the date of election for three years on payment of a subscription of Twenty-five Pounds.

The whole of the income of the Association will be applied solely towards the promotion of the objects of the Association as set forth in the Memorandum and Articles.

THE QUALIFICATIONS FOR MEMBERSHIP

Article 4 provides the following qualifications for membership:—

"*Candidates for admission as members must be approved by the Council and must be bona fide British manufacturing engineers or bona fide British manufacturers of articles accessory to engineering plant other than those whose interests in foreign manufactures or otherwise might be antagonistic to the objects of the Association, and must be individuals or incorporated bodies. Any unincorporated body or firm falling within the above definition if approved by the Council may have the privilege of membership, meaning thereby the right to nominate any one of its members to be a member of the Association as its representative. All corporate bodies must be represented by either a Director or other responsible official properly accredited and not under 21 years of age. Such representative shall while thus accredited be entitled to all the rights and privileges belonging to membership. Any member ceasing to hold the necessary qualifications as defined above shall ipso facto cease to be a member of the Association and shall forfeit all rights of membership.*"

The fact of a firm possessing engineering or other works or being interested in such works in Great Britain does not *in itself* qualify that firm for membership, nor does the possession of engineering or other works outside Great Britain necessarily disqualify such firm from membership.

The essential point which will determine the qualification is whether in the opinion of the Council the applicant for membership has no foreign interests or connections which are detrimental to the interests of the Association.

THE RETIREMENT OF MEMBERS.

Article 16 provides for the retirement of Members as follows:—

"*A member shall, if he wishes to retire, give a written notice not less than one calendar month before the expiration of the year, of his wish to retire, or he will be liable for the subscription for the ensuing year. Subject as aforesaid, any member may retire at any time on giving one calendar month's notice in writing.*"

The Immediate Advantages of Membership.

The "Objects of the Association," on pages 16 to 18, convey on broad lines the advantages which members will eventually derive from the Association.

It is only natural, however, that the realisation of some of those objects must be the work of time and of effective organisation and management when the Association has attained a full measure of support.

The benefits which members will derive from the Association forthwith may be summarised as follows:—

(1) Members receive at frequent intervals Reports on matters which affect their business interests in China. These reports are issued without the delay which is incurred in the issuing of Government information, and they are untrammelled by those restricting influences which generally rob Government reports of their practical value. They are issued *only to members*. This information alone is worth the annual subscription of Ten Guineas.

(2) Members can obtain, through the Association in London, first-hand information on specific subjects from the Association's Commissioner in China.

(3) Members who are sending representatives to China can obtain from the Association credentials which will enable them to make use of the Commissioner's services and any other facilities in China which the Association can afford them for the furthering of their business.

(4) *As the Association has the official recognition of the Foreign Office, it can obtain for its Members the support of the British diplomatic and consular officers throughout China.*

(5) Members who wish to estimate for a particular contract in China, but have not a permanent representative of their own, can be put in touch with technical men on the spot who can negotiate the matter on their behalf.

(6) Members can by collective action control the conditions of tendering both in the Home and Foreign Markets. Thus objectionable clauses in specifications can be successfully combated.

(7) Members are notified of any important Chinese who may be in Europe in connection with engineering contracts.

(8) Members are warned of undesirable business connections in China.

(9) Members can have their names, addresses and specialities printed on a list in English and Chinese which will be issued by the Association to the Consuls and the European and native purchasers in China.

(10) Members who wish to publish any of their documents in Chinese can be put into touch with competent Chinese translators and writers in London.

(11) Members who wish to train Chinese students in their works as a means of obtaining orders later on, can apply to the Association's Commissioner, through the Association, to find such students for them.

(12) Members can obtain business from their fellow-Members. There is a growing tendency for Members to place orders with each other, and the Secretary is often applied to for the names of Members who manufacture some particular article.

STATUS OF THE CHINESE NATIONAL RAILWAY CORPORATION

REPORT SUBMITTED TO THE DIRECTOR GENERAL BY THE TECHNICAL SECRETARY, DECEMBER, 1912.

FOREWORD:

So much misinformation has found its way into print concerning Dr. Sun Yat-sen's railway program; his honesty of purpose has been so virulently attacked and the characters of all connected with him have been so persistently maligned by certain foreigners uninformed of his real motives, that I feel in honor bound to make public and at the same time invite the attention of the authorities at Peking to the exact conception held by myself concerning the legal position of the Chinese National Railway Corporation, and its true relation to the Central Government. The following confidential report on The Status of the Chinese National Railway Corporation submitted after a thorough study and analysis of the various legal roads open for its usefulness, was approved of and accepted by Dr. Sun and his associates as the basis of their future work.

When I joined Dr. Sun as Technical Secretary or Adviser to his organization, I soon realized that the scheme possessed potentialities diametrically opposed to the principles of a representative or republican form of government, and instead followed the old Manchu autocratic custom of conferring vast powers on some favorite official, regardless of the higher interests of the country, and without proper safeguards against his dishonesty.

In other words, the appointment of Dr. Sun Yat-sen to control the financing and construction of all the future railways of China, and the power to employ the national credit at his discretion, could be construed by the unsympathetic as the most stupendous piece of political "graft" ever recorded in history. In fact Dr. Sun held a very vague idea as to his exact position and inclined to the belief that he had been granted a personal monopoly of all future railway concessions, and the way was honestly open for the accumulation of an immense fortune for himself and his associates through the sale of these privileges to foreign capitalists. I perceived that sooner or later the scheme would have to be exposed as a gigantic political job, and determined to resign the position, if I found it impossible to find some honorable solution to the problems presented, and so save President Yuan and Dr. Sun from the ridicule which would follow its inevitable denouncement. I am compelled to bear witness, that as soon as Dr. Sun and his associates grasped and assimilated the finer points involved, and clearly understood their exact legal relation to the President, and their duty to their country, their patriotism rose superior to personal considerations, and they unanimously agreed to my arguments, abandoned the idea of a private corporation, and determined to work in harmony with the President as a loyal and faithful official Commission, and to exert their utmost strength to bring the Central Government into harmonious relations with the Provinces in the question of railways.

My views on this matter adopted by Dr. Sun as the basis for his future program bear full testimony to his patriotism and his loyalty at that time to the President, and had these ideas been rigidly followed out, the great Republic of China would have been more firmly established to-day, with Peking and the Provinces in full harmonious accord through a mutual respect and recognition of each other's rights and responsibilities. It is not too late to mend these matters.

Unless the Provinces are ultimately permitted to co-operate in the construction of, and to participate in the profits of railways within their own borders, the time will come when the resources of the Central Government will be inadequate to act as the security or guarantee for railway loans. It may be said, that this point has already been reached. The foreign Powers have refused to permit the Chinese Government to exercise its sovereign right to devise its own national railway scheme, and are determined to continue to compel compliance with their demands for railway concessions for their own political profit and that China shall pay the bills.

At the present time China is actually compromised under foreign loan agreements to the construction of approximately 8,000 miles of railways. The funds for construction have still to be raised abroad as Chinese Government Loans. This means that the Government will be compelled to borrow the enormous sum of $400,000,000 gold in the markets of Europe as soon as conditions justify the issues. These loans will be secured on the physical property and earnings of the lines with the guarantee of the general revenues and good faith of the Chinese Government.

In the present state of the finances it is clear that the surplus revenues of the Central Government are woefully inadequate to meet any great deficiency in the earnings of the proposed new railways. It follows as a natural consequence, that if the lines do not pay in the first few years, and if the treasury fails to meet the

deficit, the lines will have to be taken over and managed by the Bondholders, or to avert this foreign control, the Central Government will be compelled to lay forcible hands on Provincial and Municipal revenues to make up the deficiency in the Central treasury. This, in turn, is certain to create wide-spread discontent, and if the temper of the people has not undergone a radical change in the last two years, to open rebellion, to be suppressed again by the slaughter of thousands of innocent people whose only treason would be the defense of their provincial rights.

The insane competition amongst the European Powers for railway concessions in China must soon be brought to an end, or China's financial back will be broken, and her independence frittered away. Japan's mad scramble for railway privileges and loans in China is remarkable at this time, considering her inability to finance the lines herself, and the improbability of being able to obtain assistance from the European markets. It stands to reason that the British and French investors will be in no mood to finance Japanese or Russian railways in China for years to come, as they have their own loan obligations to take care of as soon as conditions permit them to again turn their attention to China. The cupidity of the Powers has created a situation where it will be impossible to carry out their schemes, for it seems plausible to believe that the European markets will not be able to absorb $400,000,000 gold of Chinese railway bonds in the next decade, except at terms which China cannot entertain. It is natural to infer that if these schemes are carried out at all, they will have to be financed in small instalments by British and French interests, and unless Germany, Russia and Japan can furnish their own funds there will be little chance of their lines being constructed. It is also apparent that owing to the impoverished condition of the treasury the collateral security or guarantee of the Central Government, is inadequate for the entire 8,000 miles. This guarantee may be acceptable for the first few loan issues, but as the loans increase, the value of the guarantee will diminish, and the terms will have to be higher or the loan will fail. There are one or two ways still open for China to save herself. Unless a proper program is outlined and adhered to, a clear path has been opened for the future foreign control of China's railways.

On the other hand there are many unpledged Provincial and Municipal revenues which could be allocated for the initial security to railway loans, revenues which are outside the jurisdiction of the Central Government and cannot be interfered with without provoking internal disorders. The following recommendations to Dr. Sun Yat-sen as to the harmonious co-operation of the Central and Provincial authorities still hold good, and with some modifications can yet be applied to improve the situation. The creation of an independent government railway commission to act as the holding company and mediator between the Central and Provincial Governments so that both sides will equally share the burdens and responsibility and participate in the profits, is one of the roads out of the dilemma. If the present program of construction is followed out, and the 8,000 miles of railways already contracted for are financed and constructed within the next decade, there will have to be some visible increase in the surplus revenues of the Central Government, to admit of the successful flotation of the loans; or, if the loans are floated and the railways fail to earn their fixed charges, and the Government is called upon to make good the deficit from an already depleted treasury, it will have to forcibly seize upon the Provincial or Municipal revenues as the only way to prevent foreign control. This in turn means internal discord and strife.

The reasons for the failure to apply this principle to Dr. Sun's scheme at the outset was due to the difficulty at that time to bring the turbulent Provincial authorities into line. These difficulties do not exist to-day, and the Government could readily and amicably arrange a satisfactory basis of co-operation The second reason for the failure to apply the scheme, is traceable to the great opposition of foreign interests who desire to control and dictate China's financial affairs, and who stubbornly oppose any relaxation of the prerogatives of the Central Government that might establish the right of the Provinces to a voice in their own affairs. In their inflexible adherence to certain financial principles, the foreign official financial institutions backed by the full weight of their respective Governments, have viewed with stern disfavor any direct provincial or municipal loan in China, whereby independent financiers might break through the ringed fence of monopoly and create terms opposed to their ideas of financial supervision and ultimate financial control. Only by supporting a strong autocratic and centralized government at Peking, having absolute control over the credit of provinces and cities, can the monopoly be upheld and the "indispensable" terms perpetuated. To this determination to maintain at all hazards the centralization of power at Peking for the facilitation of forging the chains on China's independence, is traceable the gradual disappearance of those republican principles created by the overthrow of the Manchus, and the recrudescence of autocratic methods having for their ultimate purpose the strangling of free institutions and the right of the people to a voice in their own affairs. And the perplexed, harassed, trusting and inexperienced rulers at Peking, attracted by the lure of gold, are enmeshed and vainly struggling in the web of political finance, from which there is no escape.

China cannot undertake the financing of any new railways as matters now stand, at least until the present trunk lines contracted for are completed. She has been squeezed dry. The financial markets would reject the negotiations for further loans, until their own schemes have been successfully carried through. There are roads of safety open to China, if she will follow them.

G. B. R.

To the

Director General

Chinese National Railway Corporation,

Shanghai

When President Yuan Shih-kai signed the special Mandate in September last, authorizing Ex-President Sun Yat-sen to organize a Central Railway Company, and to finance and construct railways throughout the country, he also decreed that the sum of Tls. 30,000 per month be appropriated from the revenues of the Railway Board, to defray the necessary expenses of this office. The relation of Dr. Sun Yat-sen and his organization to the Central Government, is therefore in the nature of a commission, appointed by, and deriving its powers and finances from the Government, acting in harmony with, but independently of the Ministry of Posts and Communications.

Dr. Sun established offices at Shanghai, and surrounded himself with a staff of assistants, whose salaries were paid from the Government appropriation. Up to this point, the character of a government commission was duly followed, but on opening the offices in Shanghai, the organization was styled The Chinese National Railway *Corporation*. As no Articles of Association had been drawn up, no shares subscribed for, or any moneys paid in, it is evident that as a Corporation it had no legal commercial existence.

The powers conferred by the Presidential Mandate, being too indefinite to admit of successful negotiations with capitalists for the financing of Chinese Railways, it was decided that a charter amplifying and defining these powers be drawn up and submitted to the President and National Assembly for approval.

The proposed charter grants to the Chinese National Railway *Corporation* certain broad and well defined rights for the financing and construction of future railways in China, amongst which is the right to build lines by the proceeds of a government loan or guarantee of bonds, subject to the approval of the National Assembly.

The granting of the Charter implies the existence of a Corporation, which is misleading, as the Corporation *exists in name only*. The question naturally arises; if the National Assembly and the President concede a Charter to a Commercial Corporation which does not exist, will it remain legal and binding? Is it legal or proper for the National Assembly and the President to grant such wide powers to a corporation whose Articles of Association have not yet been drawn up, and whose future directors and shareholders are unknown to the Government? What guarantee has the Government that the control of the *Corporation* will remain in Chinese hands, and how far will the *Corporation* be permitted to invite foreign subscriptions to its shares? It goes without saying if the National Assembly grants a Charter to a Chinese National Railway *Corporation*, that body must exist in a corporate form, with a share capital, subscribed and paid up, a Board of Directors, and Articles of Association duly registered according to Chinese law. Is it legal to confer such powers on a Commission which derives its financial support from the Government, or is it possible for such a Commission to delegate these powers to a stock corporation and capitalize the power conferred on it by the Central Government? It appears to me that there is a very important legal point involved which may arise at any time to threaten the legality and invalidate any negotiations which the present Commission may enter into for the financing or constructing of railways. This point is so important, that I believe it my duty to point out the contingencies which may arise in the future, unless some solution to the problem is found.

I accept as a fundamental fact, that Dr. Sun Yat-sen is animated solely by a patriotic desire to benefit his country, and that he has no idea of capitalizing his patriotism or accepting payment for his past services to the Republic, by a monopoly of railway franchises or concessions. In the event of any disaster to President Yuan, he would without doubt be called upon to preside temporarily at least over the destinies of his country. The natural evolution of politics in the new Republic will demand Dr. Sun as a candidate for the Presidency, in which event there is a possibility of his election. Bearing this in mind, it is well to carefully analyze the situation arising from the President's Mandate conferring on Dr. Sun the power to form a Central Railway company, and what it may lead to unless a careful program is prepared and carried out. We must assume that only the highest patriotic motives influence Dr. Sun in accepting the commission entrusted to him, and that his first idea is the welfare and progress of China.

When I was invited to join this office as Technical Secretary, I had formed the idea from the few conversations with Doctor Sun, that he hoped to finance and construct the lines of his proposed system by the sale of franchises, granting to foreign corporations the right to finance, construct and operate the lines for a term of years, after which they would revert to the government either by purchase or right, or under terms to be agreed upon with the financial syndicates. I accepted the viewpoint that Dr. Sun stood in the position of a man who had secured a monopoly of railway franchises from the government which he was at liberty to negotiate abroad on the terms most favorable to himself and China, deriving a legitimate profit from the result of these negotiations.

It was with this view in mind that I pointed out to Dr. Sun, that before foreign capitalists could be induced to finance a franchise in China, certain essential laws would have to be enacted at once. A National Railway Law and Regulations would have to be passed; the relation between the Provinces and the Central Government would have to be clearly defined in regard to their respective control over railways and inter-provincial commerce, and incorporated into the constitution of the country; the right of eminent domain would have to be enacted into a law, and its observance made compulsory by the Provincial Governments, and the Central Government would have to guarantee the lines against destruction by the people, or in other words provide ample police protection, before foreign investors would risk their money in operating a railway under their own control in China. Dr. Sun seemed to think that these obstacles could be readily surmounted, and that a National Railway Law would be drawn up.

Having in view this phase of the situation, in which the various projects could be built and operated by foreign companies under an out and out franchise, and that the profits of the company would arise from the sale of these rights, either by a lump cash sum or participation in the shares, I readily concurred in the idea of styling the Commission as the Chinese National Railway *Corporation*. For as I believed, it would be better to have a stock corporation organized for the proper manipulation of the business.

It was also with this idea in mind, that Mr. Donald and myself suggested the necessity of a charter for the company that would amplify and define its powers, and permit it full scope to operate without fear of future governmental interference, except in certain specific instances. In all this, I believe, we have taken the proper course.

I would like to point out, however, that there has been a radical change of sentiment concerning the advisability of constructing the lines under the terms of a franchise. This indicates that the people of China are not yet ready for the introduction of foreign capital for the purpose of constructing railways or other industries along the lines suggested, and the opposition to such a scheme would be so great as to render it impracticable. So in addition to the many essential laws and regulations necessary for the protection of the foreign investor, pending a change of sentiment throughout the country, the hostile attitude of the Chinese people, makes the financing and construction of railways under a franchise absolutely impracticable and impossible of realization.

If we admit there is no hope of constructing railways under a franchise, then we must relinquish the idea of conducting the affairs of Dr. Sun's Commission as a Corporation, and the necessity of a Charter is nullified. This conclusion has been forced on me after a careful consideration of the question as to how the lines can be successfully financed. I pointed out over a month ago that we were losing time speculating on schemes to finance the lines, as we would have to be guided by the attitude of the financiers, and it was necessary to ascertain just where

they stood on the proposition, and what terms, if any, they would consider as a basis for negotiation. We are still ignorant of this point, but as China is not prepared to surrender franchises to foreign capitalists, the question becomes somewhat simplified, and enables us to tread on firmer ground. If we eliminate construction by franchise, it leaves three alternate methods of financing, and to preserve the character or fiction of the *Corporation* we will consider the method that will tend to strengthen that presumption.

As a Corporation operating under a Charter from the Government, the logical procedure would be to file Articles of Association, publish a Prospectus and invite subscriptions to shares in the Corporation, so as to give it a legal commercial standing. The assets are the rights to construct the necessary railways, which can be capitalized at a low figure, with the central corporation as a holding company for the various lines to be built. Let us assume that we form a Chinese National Railway Corporation, with a capital of say $10,000,000 gold divided into 100,000 shares of $100 each. As Dr. Sun Yat-sen personally holds the Presidential Mandate and powers, he has the undoubted right to allot these shares as he sees fit. Let us assume that he retains $5,000,000 in shares for himself or his associates and invites other Chinese officials or capitalists to subscribe to the balance at their par value, thus raising the necessary funds for the prosecution of the many preliminary studies connected with the promotion of any of his separate projects. Let us further assume, that after necessary preliminary surveys and reports on a certain line have been concluded, that a subsidiary company is organized to construct the line, in which the holding company either surrenders the charter for a fixed sum in advance, or transfers its rights for a certain percentage of the shares, profits or otherwise.

Let us assume that a certain amount of Chinese capital is secured in this way, and construction work commenced, and then the company turns to the foreign banks to float an issue of bonds for the further construction of the line. Up to this point it is all clear sailing, but experience tells us that when a private Chinese industrial company endeavours to float a loan or an issue of bonds in the foreign markets, it is almost impossible unless the bondholders are assured control of the property. This the Chinese have not been disposed to grant in the past, and therefore no foreign loans have been made to private companies. Pending the establishment of a proper code of laws which will permit foreign bondholders to enter into possession of the property in case of default, there is little hope that this condition can be changed. In other words, it is impossible for a Chinese railway company to float its bonds in the foreign market *unless guaranteed by the Central Government.* There may be some foreign banks who might entertain the proposition to underwrite the bonds for the construction of a railway for the Chinese National Railway Corporation. In such a case, China would lose more than she would gain. Unless the Corporation has sufficient Chinese capital to make a good start with, the entire cost of creating the property would fall on the bondholders, and the underwriting banks would demand excessive and onerous terms, and a large percentage of the common shares as an inducement to market the bonds, in addition to supervision over accounts, employment of foreign engineer and traffic manager, and representation on the Board of Directors. It is remotely possible that some syndicate of bankers would undertake to finance the construction of a line secured by the bonds of a duly chartered and registered Chinese Railway Corporation, but it is also obvious that in such a case, the latter would have to relinquish control, and concede at least one half the shares to the foreign syndicate. While it might be justifiable under certain conditions, yet I firmly believe that such a deal would not be favorable to China, and would most certainly lead to internal trouble and ultimate cancellation of the Charter. Therefore the price is too high for what may be obtained readily on cheaper and more lenient terms.

If the bonds of a private Chinese Railway Company could be marketed abroad, it is obvious that the Chekiang, Kwangtung, Fukien, Anhui and Kiangsi Railway Companies would have long ago been successful in negotiating a construction loan. These provincial lines already have some miles of line built and in operation, and therefore have some tangible security for an issue of bonds. Especially is this so with the Chekiang and Kwangtung lines.

We must also remember the position of the Central Government on the question of Provincial loans. The Government has steadily refused to acknowledge the right of the Provinces to contract foreign railways loans, and as a consequence foreign financiers refuse to entertain overtures from the Provinces. For at least three years the Anhui, Kiangsi, Lotung, and Fukien railway companies have been hawking a loan around the commercial and financial firms of Shanghai, well knowing that the Central Government's prohibition rendered the negotiations abortive. Financiers have been willing to accept the Provincial guarantees to railway bonds, providing that the Central Government gave its indorsement or super-guarantee. The Central Government has maintained the position that it would not extend its credit to the Provinces without control of the railways, and as the Provinces could not or would not accede to this, a deadlock has been created. I believe then, that although there is a remote possibility of floating the bonds of a Chinese Railway Company, the terms would be such that the immediate benefits would go to the foreign bondholders and the bankers underwriting the bonds, and as they would insist on control and representation on the Directorate, the profits which otherwise might be expected to accrue to shareholders would probably be diverted to betterments of the line, and other expenses, for as long a period as possible.

The above assumption is based on what might be termed a joint Chinese and Foreign stock company, in which the Chinese provide the franchise, and the Foreigners the money. To raise the funds by an issue of bonds, the Chinese company must surrender a large percentage of the common shares, probably one half, and accept about 80 to 85% for the bonds, or perhaps less. In other words, to obtain the financing of a railway for the Chinese National Railway Corporation, the latter would have to admit foreigners to an equal share in the ownership of the line, and divide the profits with them. If the Government can negotiate a loan at 90 to 95 at 5% for the construction of railways which remain under Chinese control, or obtain the same result by guaranteeing the bonds of a private or provincial Chinese railway company, is it wise to surrender these advantages by financing the lines in the manner outlined? Aside from the fact that the scheme is almost impracticable, and that few, if any, foreign syndicates would entertain the proposition, it is doubtful whether the present sentiment of the Chinese people would favor such a solution. So, if we eliminate the possibility of financing the lines by the sale of franchises, and admit the difficulties surrounding the flotation of a bond issue by a private Chinese railway company, we are compelled to fall back on the only two remaining lines of action open to the Commission. These facts must be carefully weighed and considered, for if we once accept their soundness, it follows as a natural sequence that the powers of Dr. Sun will have to be limited to the functions of a Government Commission. The only other avenues open for the financing and construction of railways are by a direct government loan or by a government guarantee on the bonds of a private or semi official organization, or by the super-guarantee of the Central Government to the bonds of a Provincial or Municipal Government.

As we must accept the fundamental principle that Dr. Sun is inspired by the loftiest motives, and is not seeking personal gain, it is of course impossible to suppose that a government loan can be floated for the construction of a railway, to remain under Dr. Sun's private control or the control of his company. Therefore if it should be necessary to construct any of Dr. Sun's lines under the provisions of a Government loan, the line must be immediately turned over to the Government. As the Director General of a chartered commercial corporation, Dr. Sun could not legally enter into negotiations involving a government loan, even though it was so specified in the Charter, without special authorization to do so in each and every instance, and then only as the agent or intermediary for the Government. Let us assume that the Charter of the so-called Corporation concedes the right to negotiate a government loan for the construction of a railway, it is clear that Dr. Sun could not commit the Government to any such step without special sanction beforehand, and the final

terms of the loan subjected to confirmation by the National Assembly. In other words, it would be impossible for Dr. Sun as Director-General of a private *Corporation* to initiate negotiations for a Government loan for the construction of a railway, except as a special agent of the government, acting under certain well defined instructions.

If we admit the point, that Dr. Sun cannot negotiate a foreign railway loan on his own initiative, or that if Government sanction is given that the line thus financed, must come immediately under government jurisdiction, we must also accept the point that Dr. Sun is in reality a Special Commissioner of the Central Government, delegated to conduct such negotiations, subject to its instructions and approval. If we also admit the point that a government loan may become necessary to provide funds for the construction of certain of the lines suggested by Dr. Sun, the question naturally arises, how can it be carried out by Dr. Sun without recognizing the points already outlined? The natural and obvious answer is, that if a government loan is necessary, the negotiations should be conducted by the Government direct, dispensing with the services of Dr. Sun.

Under normal political conditions this would be the correct position to assume, but the conditions surrounding the financing and construction of railways in China, are extraordinary, and find no parallel in other countries. I am therefore of the opinion that the Central Government can profitably utilize the services of Dr. Sun Yat-sen, in the future negotiation of railway loans, to establish a new and more favorable set of terms, and create a new precedent.

The history of past railway loans to China is more or less familiar, as is also the hard up-hill fight that China has made to secure the most favorable terms, and establish her right to expend the funds without supervision. The history of these negotiations is sufficient evidence of the hold certain financial institutions exercise over China's railway loans. By a combination of circumstances, China was compelled to confine the negotiations for railway loans to certain approved foreign financial institutions, indicated by their respective governments as having a monopoly of official support. It must also be kept in mind that all railways in China constructed by foreign loans, were the outcome of direct concessions extracted from China in the years 1897 to 1900, when China was ignorant of their value. Political pressure secured these concessions for the foreign financial institutions, and foreign Governments exercised their power to maintain a clear field for the favored corporations. Thus China has been compelled to restrict her past railway loan negotiations to a very limited circle of financiers, and the latter, free from the menace of competition, exacted their own terms. China has however secured more and more favorable terms in each succeeding transaction, until in the Hukwang Agreement, the limit of concessions on the part of the financiers seems to have been reached.

There are still some objectionable features in foreign railway loan agreements, and in my opinion China should continue to hold out for the elimination of all unnecessary clauses, until a railway loan is recognized and accepted as a purely financial proposition, without the injection of any clauses restricting her freedom of action in any way. The loan should be secured on the physical property and earnings of the line, covered by a guarantee of the general revenue and good faith of the government.

Especially is it important that all references to the purchasing of materials be omitted, and China be permitted to purchase supplies in the cheapest market. Also that the customary five per cent purchasing commission to the banks be abolished in all future loans. This purchasing commission is in reality an extra bonus to the underwriting banks, for which they give no adequate service in return, and which might be more advantageously expressed in an extra point or half point commission. We may take the case of the Hukwang Loan as an example. The ultimate cost of the line will approximate say $60,000,000 gold of which at least $25,000,000 will be expended for the purchase of materials abroad, and on which the Banks will receive a "Purchasing Commission" of 5% or a total of $1,250,000 gold, and this notwithstanding all large tenders and purchases are to be made only by the order of and through the Chinese Managing Director. This sum spread over a period of four years, will equal $312,500 gold per annum or say Tls. 500,000 which could be employed in paying the interest on the loan. In other words the bonus to the Banks, expressed as Purchasing Commission, is roughly equivalent to 2% on the amount of the loan. As the Banks are now accustomed to this extra bonus they will desire the same terms in all future loans. Would it not be better to concede the underwriting banks an extra ½ or even 1 per cent commission in the flotation of the loan, and have them waive the 5% bonus, disguised as a purchasing commission? China would then be free to purchase her material in the cheapest market, and by establishing her own central purchasing department under control of the Director-General of Railways, she would save at least another 2% on the cost of materials purchased abroad. I consider this question as one of the few remaining points to be adjusted in China's favor in future railway loans.

Now the point to be carefully considered is this: The agreement between the official banks known as the Sextuple Group, covers all government loans, and may therefore be extended to include the next railway loan. In such a case the Government may find it difficult to negotiate a new set of terms with the official groups.

The creation of Dr. Sun's railway office or Commission, however, offers a loop hole to avoid the necessity of dealing with the Sextuple group, and of negotiating a national railway loan with independent bankers who might be more inclined to accept new conditions. The time is propitious for the establishment of new terms in railway loans. Heretofore all lines constructed from the proceeds of a foreign loan, may aptly be termed "concession" roads, in which China had no other option than to deal with the recognized official groups. The signing of the Loan agreement for the Lanchow Extension of the Pienlo Railway with the Belgians, leaves the Sinpu concession (held by the British and Chinese Corporation), the Japanese extension to the Kirin Line, and the promise to Germany for the financing of the short sections between the Tientsin-Pukow and Peking-Hankow railways as the only other existing compromises, after which China will be liberated from the influence of the "concession" period and of compulsory dealing with the official groups. For the construction of all other lines China is free to approach other financiers. A new era in railway construction has therefore commenced and China should exert every effort to secure the elimination of all unnecessary clauses to future railway Loan Agreements.

I am also of the opinion that future railway loans should be secured on the physical property and revenue of the lines, with the guarantee of the general revenue of the country, and that no specific Provincial or other revenues should be allocated as additional or collateral guarantee. I am aware that the allocation of Provincial revenues was made in response to public sentiment in order to avoid the hypothecation of the line itself, and its possible management by the bondholders in the event of default. After all, the allocation of this or that revenue, or the hypothecation of the line itself, amounts to the same thing, if the good faith of the Government is taken into consideration. The same reasons as were advanced to shift the security from the physical property of the line to a Provincial revenue, to avoid the possibility of a demand for foreclosure in the event of default, might also be applied to the provincial or other revenue with the same force and reason. In fact, the same question has lately arisen in connection with the control of the Salt Gabelle. The entire problem of security is solely a matter of good faith on the part of the Government, and now that an annual budget is to be drawn up, and revenues and expenditures accurately recorded, there should be no further necessity for the allocation of special revenues as a super-guarantee to a perfectly sound railway loan secured on the property and earnings of the line and covered by the general credit of the Government. The consequences of this policy are probably keenly felt by the new administration in its financial difficulties, as many productive sources of internal revenue are allocated to the service of sound railway loans, when they might have been profitably employed at this time, as security for necessary loans for the reorganization expenses of the government.

I am therefore of the opinion that now is the time to initiate new railway loan terms, and I am furthermore convinced that

these terms could be more successfully arranged through the medium of Dr. Sun's offices than through the regular channels at Peking. First because at Peking, these negotiations would have to be made through some financial intermediary who would expect the customary brokerage fee for his services, thus nullifying the advantages gained by the abolition of the purchasing commission. If a brokerage or promoter's fee or commission is included, this could be returned to the government or form a fund for the maintenance of Dr. Sun's office and staff.

I believe that the best results would be secured by empowering a special deputy to proceed abroad, and open negotiations with independent bankers for the object of furnishing a railway loan based on these terms, and, when the preliminaries are settled, Dr. Sun could come in person, and with full powers from the government, sign the final papers in the name of the Chinese National Railway Corporation. As the corporation is in reality only a Commission deriving its powers from the Government, and Dr. Sun as Director General of the Corporation is in reality representing the Government, I believe that much greater headway can be made, better terms secured, and the payment of all commissions avoided. This appears to me the only legitimate way in which Dr. Sun can engage in the negotiation of a government loan for the construction of any of his projected lines. As the various amendments to the Charter of the Corporation virtually annul its independence of action, and make the organization subsidiary to the government, the foregoing expression of Dr. Sun's position, is in direct harmony with the spirit of the amended Charter.

As I have outlined Dr. Sun's relation to the Central Government in the question of government loans, there remains only one other scheme under which railways can be financed, and that is by the government guarantee of interest on the capital or bonds of a semi-official or private company. When capital is raised in this manner the transaction partakes of the character of a government loan, but subject to a somewhat higher rate of interest. The difference between a loan and a guarantee is that in the former the national credit is pledged unconditionally, and the lender need have little concern as to the character of the work for which it is used, unless the works are pledged as collateral security, while a government guarantee of interest on the bonds of a private or semi-official company, will not secure the acceptance of as low a rate of interest as a government loan. Although the Chinese government may be able to secure all the money it requires at five per cent interest, it may be necessary to offer a guaranteed interest of 5½ to 6 per cent to market the bonds of a private or semi-official company. Therefore a government who can borrow money at a low rate of interest will find it more advantageous to do so, rather than pledge its credit indiscriminately in guarantees to privately controlled companies. The situation in China is however so complex and the construction of railways by a direct government loan surrounded by so many conditions, that the national guarantee of interest to the bonds of a semi-official company, would appear to be one way to solve the problem of future railway finance, and Dr. Sun's corporation would then justify its existence as the instrument through which the line may be constructed.

As the Chinese National Railway Corporation as at present constituted is in reality a Commission appointed by the government, the latter could not guarantee the bonds of this organization without creating great opposition throughout the country, for once the government credit is extended to the bonds of Dr. Sun's organization, the provincial and other companies will demand the same facilities.

Many provincial railway companies having the guarantee of the Provincial governments have unsuccessfully tried to secure this assistance from the Central Government in the past, and if Dr. Sun's Company is singled out as the sole beneficiary of the government's credit the other companies will have legitimate grounds for complaint. Owing to the present condition of China's finances, and the difficulties attending the floating of any large loan for railway construction, I believe that a government guarantee of bonds is one solution of the problem, providing always, that due care and discretion is observed in extending this credit to such lines as will be most likely to meet the guarantee of interest from their earnings. It goes without saying that a loan for the construction of 1,000 miles of railways approximating $50,000,000 gold, would be difficult to float at the present time, at terms satisfactory to China. The same object could be secured however, without adding directly to the national debt, by a guarantee of interest on the bonds of a company controlling the rights to construct certain well selected and profitable projects. Instead of binding the government to the construction of a single 1,000 mile trunk line, the initial sections of several trunk lines could be commenced, and pushed through to completion without any strain on the national finances.

Where such lines are within the jurisdiction of the Central Government the latter could utilize Dr. Sun's organization or semi-official company, as the operating company whose bonds would be guaranteed by the government. After the interest on the bonds and other fixed charges are met from the earnings, the surplus profits would revert to the government, minus a small percentage for the maintenance of Dr. Sun's central organization. In other words, the Chinese National Railway Corporation would be the instrument through which the Central Government could readily finance certain guaranteed railways without resorting to a direct loan, and at the same time retain all its powers, and receive all the profits. As a matter of fact the lines so constructed could remain under the actual control or administration of the Railway Board through duly appointed officials, while nominally the control would be vested in the Chinese National Railway Corporation.

In this way the existence of Dr. Sun's Commission as a corporation, could be justified and employed to the advantage of the Government. I am of the opinion however that there is still another line of activity open for the utilization of Dr. Sun's organization in the advancement of China's railway program, one which will harmonize the interests of the Central Government with the Provinces, and lead to a hearty co-operation of all concerned in the development of the country.

There are many private companies holding Provincial concessions recognized by the Central Government, but, owing to their inability to raise the requisite capital within the country, and the refusal of the Central Government to guarantee the bonds of these companies unless assured control of the line, and the disinclination of the companies to cede this last point, a deadlock has been created which neither side seems inclined to break. Naturally so long as these conditions last, no advance can be made, and a solution to the question is therefore imperative for the general welfare of the country.

Here is where the services of Dr. Sun and the semi-official Chinese National Railway Corporation can be utilized for the best interests of the entire country.

My idea is that the Chinese National Railway Corporation either as a government department or as a chartered company, under control of the government, should act as the operating company, for the issuance of bonds to construct the lines, under the guarantee of the provincial authorities and the indorsement or super-guarantee of the Central Government. After the line is built it would be operated under the joint control of the Provincial and Central authorities, working in conjunction with the Chinese National Railway Corporation. After the interest on the bonds and other fixed charges are annually provided from revenue, the profits of the line to be divided between the provincial and central governments, the Chinese National Railway Corporation as the operating company, retaining a small stipulated commission for the maintenance of its central office.

As a concrete example let us assume the following conditions:—It is proposed to construct a railway line from Canton to Wuchow in the government of the Liang Kwang. It is impossible for the people to raise the necessary share capital locally, and although the Provincial authorities may be willing to guarantee a loan for construction, the Central Government refuses assent to this method, and, although foreign financiers would gladly advance the funds on the strength of the Central Government guarantee to the provincial loan, the latter still refuses to give its credit unless it is assured control. As neither side will cede, the much needed railway remains on paper,

the progress and development of the country is checked, and mutual distrust and discord is engendered, which bodes ill for internal peace.

Now my solution to the problem is this. Let the Chinese National Railway Corporation take over the scheme, and act as the operating company to facilitate negotiations for the financing and construction of the line. The Government of the Liang Kwang will guarantee the principal and interest of 5½ per cent on the bonds of the Chinese National Railway Corporation. As this guarantee is inadequate for successful flotation the Government of the Republic of China will indorse the guarantee of the Liang Kwang Government. This insures a ready acceptance of the bonds at the most favorable terms.

This seems to be a fair division of responsibility. We will now consider the other sides to the question.

Naturally the foreign financial syndicate will require some guarantee that the funds will be properly expended and that the line will be constructed within certain specifications. To avoid all unnecessary and possibly obnoxious terms and conditions I believe that the safest course for the protection of both sides is to construct and equip the line under a fixed contract price per mile, with some highly reputable and competent foreign construction firm, who would give a bond for the faithful performance of the work within a specified time. Such a construction firm would also be willing to take their payment in the guaranteed bonds, and finance the lines as needed. This would liberate China from any of the previous obnoxious clauses in loan agreements, save purchasing and other commissions, and insure the construction of the line within a reasonable figure. It will be remembered that a British construction firm agreed to construct the Chinchow-Aigun line at a flat rate of $40,000 gold per mile, and it is evident that this figure provided for a fair profit. In other words, economical railways can be built in China on easy country at an average of $30,000 gold per mile, even under foreign supervision. If we assume that the guaranteed line from Canton to Wuchow is constructed under contract at a fixed rate, we have a definite idea of the exact cost, without fear of additional issues of bonds to make up for the possible errors or extravagance in loan constructed lines.

As the line is built, it is turned over to the Chinese National Railway Corporation for working. The operation of the line would be entrusted to a Board of three Directors, representing the Central Government, the Province and the Chinese National Railway Corporation. After the interest on the bonds, and the sinking fund had been set aside from revenues, the surplus profits, if any, would be divided equally between the Central and the Provincial Governments, minus a certain percentage or fixed sum to be mutually agreed upon for the services of the Chinese National Railway Corporation as the nominal operating or holding Company.

The adoption of the above method would be equitable to all parties and remove certain obstacles to China's railway development. The Chinese National Railway Corporation would then justify its name, and be in actuality a true National organization, having only the best interests of the country at heart. Ministers could come and Ministers could go, but the Corporation could continue its existence outside the field of active politics, and insure the continuity of a fixed railway policy, and stand as a buffer or mediator between the Central and Provincial authorities, guaranteeing to each their respective rights and participation in the development of railways and the profits accruing therefrom. Such an arrangement would also prove acceptable to foreign financial syndicates.

It is obvious that such a scheme applied to the construction of several necessary short lines would be more advantageous and of greater immediate benefit to the country than by adhering to the old system of contracting a large loan for the construction of one large trunk line. I would suggest that instead of contracting any further large loan for the construction of a through trunk line, the necessary arrangements be made for the Chinese National Railway Corporation to finance, under the joint guarantee of the Central and Provincial Governments the construction of several sections of the projected trunk systems, and, as each section is completed, the extensions can then be financed either under a continuance of the guarantee system, or by bonding the completed sections or the surplus revenues of existing profitable lines, to raise funds for the extensions.

For example, instead of incurring a large government loan for a 1,000 mile trunk line from Canton to Chengtu, or from Hankow to Yunnanfu, which would take at least five to six years to construct, let the government undertake the construction of the first sections of several trunk lines, and finance them independently under a guarantee on the bonds of the Chinese National Railway Corporation. This might take the form of the following lines:—

Samshui to Wuchow	100	miles.
Wuchow to Kweilin	145	„
Foochow (Port) to Yenping	100	„
Hankow to Siangyangfu	175	„
Chengteh to Yuanchow	185	„
Nanchang to Kanchow	205	„
	910	miles.

Here we have a total mileage of 910 miles of railways comprising the initial sections of several essential trunk lines. Is it not better to start these several lines at once, and follow out a definite program for their completion than to build each large trunk system separately from the proceeds of a large general loan? It will be noted that the terminii of these lines are accessible for the delivery of materials to enable the commencement of work at once. Instead of concentrating construction to any one section of the country and straining the national credit for the benefit of this particular through line, and delaying the progress of other provinces, it is not better to extend the national credit so that the benefits will be more equally distributed?

If a government loan was floated to construct the above mileage, it would approximate $40,000,000 gold and under existing political conditions, the negotiations might have to be confined to the Sextuple Syndicate, with a repetition of past terms and the additional "bonus" disguised as a purchasing commission. On the other hand, by splitting this mileage into short sections of guaranteed lines, the longest not exceeding 200 miles, at a construction cost of say $40,000 per mile or a total of $8,000,000, it makes possible a large competition among the smaller bankers, many of whom would be glad to compete for a small issue of $4,000,000 to $8,000,000 spread over a period of say two or three years. There are many banks, or construction corporations whose independent resources would permit them to compete for the underwriting of such a loan or to take up the construction and accept payment in bonds, whereas a large loan of $25,000,000 or more would be restricted to the more important banks, most of which are either a part of or allied with the Sextuple syndicate.

If we accept the above mentioned sections as the necessary expression of certain essential trunk lines, and assuming that such a scheme meets with the approval of the central and provincial authorities, it only remains for the different provinces after a careful study, to give the consent and guarantee to the necessary bonds. The Liang Kwang Government would be called upon to guarantee the interest on the bonds of the Samshui, Wuchow and Wuchow-Kweilin lines, a total of 245 miles which would cost under contract say $40,000 gold per mile or a total of $9,800,000. If we assume the bonds are marked at 90, with 5 points commission to the Bankers, it would require a total of about $11,500,000 for finance and construction, and a 5½ per cent guarantee would call for $632,500 gold for the annual service of the loan, plus the sinking fund after say five years. Even if we assume that the line would not pay this sum, it would not unduly strain the resources of these two rich provinces, or the central government. I feel confident however that at this capitalization such a line would soon pay 10 per cent on the combined passenger and freight traffic, providing of course that the line is under efficient management and the cost of operation is kept down to at least 50 per cent of the gross earnings.

This would provide for the annual guarantee and other fixed charges, and leave a probable surplus to be divided between the Provincial and Central Governments in such proportion as may be mutually agreed upon.

The above scheme may also be applied to the other suggested lines. After the first sections are constructed and in profitable operation they will serve as the security to finance the future extensions without any further strain on the provincial revenues.

Respectfully,

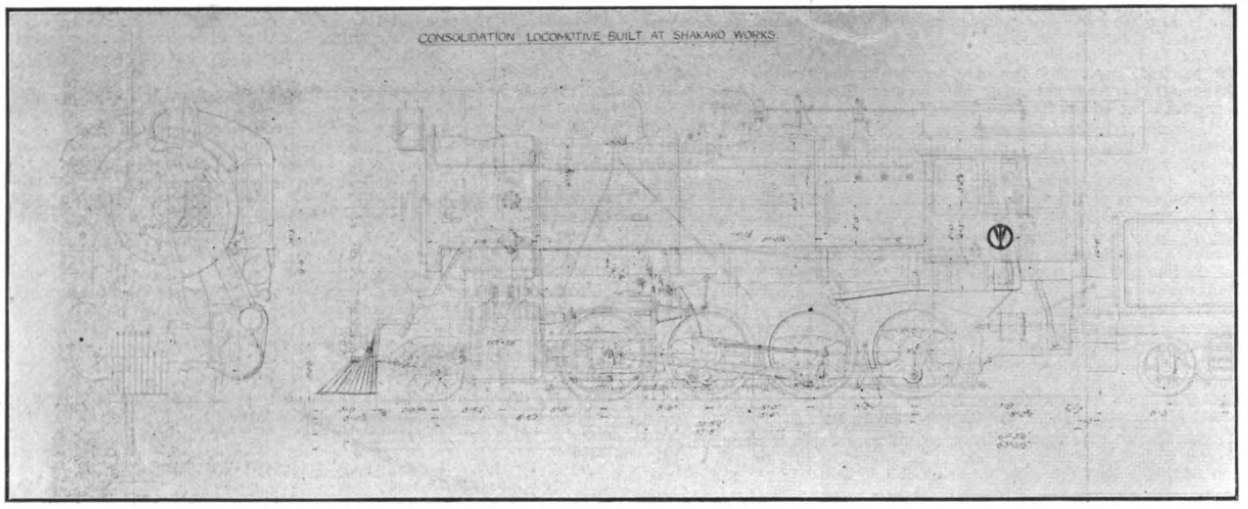
GEO. BRONSON REA,
Technical Secretary.

Shanghai, December 20th, 1912.

S. M. R. LOCOMOTIVE

STANDARD GAUGE RAILWAY ENGINE

DESIGNED AND BUILT AT S. M. R. WORKSHOPS



On Friday, October 30th, 1914, a trial trip was successfully made of a new Railway Engine on the main line of the South Manchuria Railway, which event marked a new epoch in the annals of Japanese Railway Engineering. Already on the Imperial Japanese Government Railways home-built locomotives are drawing Imperial Government trains, but all the Japanese home lines are on the narrow gauge. This one, whose trial trip Dairen had the honour of witnessing, is the first standard gauge locomotive ever designed and built by Japanese engineers. The South Manchuria Railway Company had the distinction of producing this interesting piece of work at its central workshops at Shakako. near Dairen, the terminus and headquarters of the Railway, and one of the most flourishing ports in the Far East.

The lay-out of the Shakako Workshops, though on a comparatively small scale, is one of the best and most up-to-date in the world, and the equipment is second to none. Opened only in 1911, with the most modern facilities and machinery that science had invented, nothing has yet become obsolete or old-fashioned, while new inventions and facilities are added whenever they appear. There are nearly 3,000 well-trained employees, the majority of whom live in a model town adjoining.

Having produced some of the most beautiful saloon carriages and passenger cars in the world, as well as goods cars of every description, tram cars, etc., and having, in addition, put out at short notice much machinery, such as huge winding machines for use in the Company's coal mines, etc., it is not to be wondered at that, under such an able superintendent as Mr. H. Mori, formerly Superintendent of the Workshops of the Imperial Japanese Government Railways, ambition should soar to the construction of a locomotive engine.

Hitherto, the South Manchuria Railway trains have been pulled by the finest locomotives money could buy in America and Great Britain. But it is claimed by the builders that this home product has proved by actual running to be the finest engine, with the highest efficiency, among all the locomotives in the possession of the Company. It is of entirely new design, and has been aimed at embodying the merits of the best types in Europe and America to suit the condition of the Company's lines.

Thanks to this initial success, the Workshops are now building five more locomotives of exactly the same design, and are also constructing six double-ender tank engines for the Chosen (Korean) Government Railways. Moreover, it is intended to gradually increase the capacity for building new locomotives and cars.

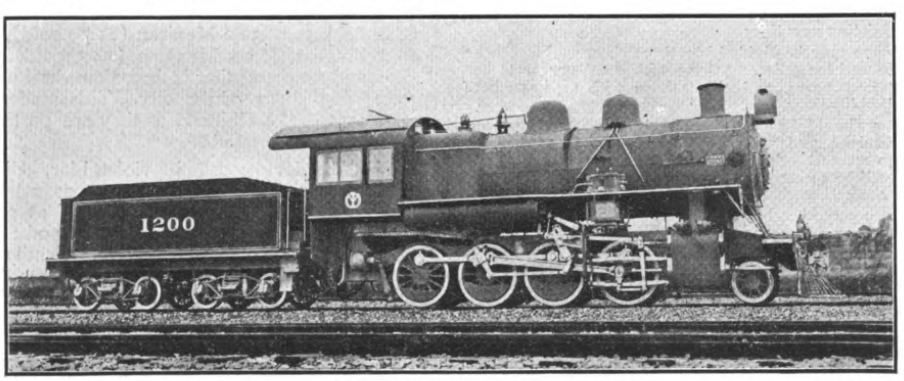
The following is a description of the engine whose trial trip is under mention:—

The frames are of plates with underhung driving springs, similar to the Continental type, and have 0.176" deflection per short ton, which lies between the English and American practices, and effects the best riding of the engine.

The boiler is of the Belpaire type, with cylindrical smoke-box, supported by a saddle made of steel plates, the exhaust pipes in the saddle being of steel.

The brick arch is of special re-enforced design, with no arch tube, which has been found, by actual trials already made on several locomotives, to last over seven months without attention.

The superheater is of the Schmidt type, with superheater heating surface of 532 sq. ft.; and the lubrications of cylinders, steam chests, and air pump are by Michalk's patent mechanical lubricator.



New Standard Gauge Engine Built at the South Manchuria Railway Shops.

The valve motion is of the ordinary Walschaert type, and the elliptic valve diagram was automatically drawn by actual valve motion, thus ensuring that the steam distributions in the cylinders are perfect.

The principal dimensions and weight distributions of the locomotive are as follow:—

GENERAL DATA

Gauge .. 4'—8½"
Fuel .. soft coal

Tractive effort	40,000 lbs.
Weight of engine in working order	181,850 lbs.
Weight on first drivers in working order	41,000 lbs.
Weight on second drivers in working order	40,750 lbs.
Weight on third drivers in working order	40,200 lbs.
Weight on fourth drivers in working order	41,100 lbs.
Total weight on drivers in working order	163,050 lbs.
Weight on leading truck in working order	18,800 lbs.
Weight of engine and tender in working order	202,400 lbs.
Wheel base, driving	15′–4″
Wheel base, total	23′–8½″
Wheel base, engine and tender	53′–5¼″

RATIOS

Weight on drivers÷tractive effort	4.08
Total weight of engine÷tractive effort	4 55
Tractive effort × diameter drivers ÷ *equivalent heating surface	646
*Equivalent heating surface÷grate area	68.3
Fire box heating surface ÷ *equivalent heating surface, per cent	5.42
Weight on drivers÷*equivalent heating surface	48.7
Total weight of engine÷*Equivalent heating surface.	54.1
Volume both Cylinders, cub. ft	12.88
*Equivalent heating surface÷Volume Cylinder	250
Grate area÷Volume Cylinders	3.8

CYLINDERS

Kind	Simple
Diameter and stroke	22½″×28″

VALVES

Kind	piston
Greatest travel	6″

WHEELS

Driving, diameter over tires	54″
Driving journals, main, diameter and length	9½×10″
Driving journals, others, diameter and length	9½×10″
Engine truck wheels, diameter	33″
Engine truck, journals	5½″×10″

BOILERS

Style	Belpaire
Working pressure	180 lbs.
Outside diameter of first ring	6′—1⅝″
Firebox, length and width	5′—9¼″×8′—5⅞″
Tubes, number and outside diameter	225–2″
Flues, number and outside diameter	32–5⅜″
Tubes, length between tube sheets	14′–5¾″
Heating surface, tubes and flues	2,367 sq. ft.
Heating surface, fire box	182 sq. ft.
Heating surface, total	2,549 sq. ft.
*Equivalent heating surface	3,349 sq. ft.
Superheater heating surface	532 sq. ft.
Grate area	49 sq. ft.
Smoke stack, height above rail	15′–3″
Centre of boiler above rail	9′–6″

TENDER

Tank	Water bottom
Frame	Channels
Weight	110,550 lbs.
Water capacity	5,000 U. S. gallons
Coal capacity	11½ short tons

*Equivalent heating surface=2,549+(1,5×532)=3,349 sq. ft.

RAILWAY APPLIANCES

THE PYLE NATIONAL HEAD-LIGHT

The remarkable results obtained in America with the Pyle National Electric Head-light for locomotives have frequently been referred to in the American railway and engineering press, and they have always provided astonishing reading for people in England where locomotive head-lights are only used as indicators to signalmen as to the class of train approaching, and not, as in America, India, Africa, Australia, &c., for lighting up the track ahead. But although powerful electric head-lights are not required on the railways of the United Kingdom, there is a very large field for their adoption elsewhere owing to the railways not being so carefully guarded as they are here.

The Pyle National Electric Head-light has been applied in America to more than 22,000 locomotives and has been undoubtedly instrumental, not only in facilitating the work of the enginemen, but in preventing many accidents which otherwise would have occurred. The light is a strong penetrating and powerful beam, of which an idea may be gathered from the accompanying illustration. The apparatus is by no means complicated, nor is its initial cost a large one. The maintenance cost, including repairs, does not, it is stated, exceed 4s. a month which, in view of the extreme efficiency of the light, can hardly be said to be worth consideration.

The apparatus consists of a turbo-generating set of sufficient capacity to supply all the lamps required on the locomotive. The rotor of this unit is of the built-up type, steam being led to the vanes through a single nozzle. Attached to the nozzle block are two guide passages which direct the impingement and flow of steam to and from the vanes on the rotor, producing the highest efficiency. The dynamo is enclosed, and of the internal magnetised type with windings proportioned to carry heavy overload without injury to the machine. The arc lamp for the head-light is of simple construction; it can be trimmed quickly and when properly focused, will illuminate the track for fully half-a-mile ahead of the locomotive.

We have only described the apparatus in the briefest possible manner in the foregoing, but what we have said, in conjunction with the illustration appearing herewith, will, we think, suffice to make the simple character of the apparatus and its high efficiency quite clear to those interested.

The address of the Pyle National Head-light Company is 500, Troop Street, Chicago, Ill., U.S.A.

Actual Photograph taken on the Chicago, Rock Island and Pacific R.R , with no other light but the Pyle-National Electric Headlight. The station seen is half a mile from the engine.

establish banks have failed owing to possession of but rudimentary knowledge by those who launched the enterprises, but with the passage of years Government and private students have entered large foreign banks for thorough training, and many of them are now equipped to assist in the establishment of up-to-date institutions. The management of the Bank of China now sets out to demonstrate that it can be of national service and at the same time be useful as a model for others who have trodden the hard road of modern finance and stumbled. All those who take a sympathetic interest in the development of China will hope that this national institution will not only from a purely banking point of view fulfil the expectations of those who founded it, but will also prove of value to the country in the adjustment of the difficult financial and currency problems with which it is confronted.

CHINESE RAILWAYS AND THE WAR.

The European war is having a noticeable effect upon the revenue of railways in China. It is difficult to believe at first thought that such could be the case, yet it may be realised when it is remembered that railways in China derive most of their freight from cargo destined for export or from imports. While there is a large passenger traffic, and a large freight traffic in ordinary times, the bulk of the latter flows from the country to the coast. There is not a great deal of inter-station cargo traffic, though that is gradually developing. When the war broke out and over-sea traffic was interrupted products from the interior were held up for lack of markets, and there has been an aggravation of affairs owing to a lack of steamers. Silk, tea, and cereals constitute the chief exports, though there is a growing trade done in merchandise of various kinds. A large quantity of this trade is carried on railways, and the war has created a condition in which the producer finds it impossible to use as he might the means of transportation provided for him. The slump in imports owing to the war is also strikingly indicated by the Maritime Customs returns. At the end of 1914 the revenue received by that organization for the year was some Taels 5,000,000 lower than the record in 1913. This decline is likely to be increased this year owing to disturbance of markets, though the oceans are now less risky to travel over, so far as raiding German cruisers are concerned, than they were some months back.

We give below the returns from the various railways for the latter half of 1914. While the surplus totals $4,609,315.85, it is some $2,000,000 less than during the latter half of 1913. In the returns of the Peking-Mukden line a slump is also noticeable—there being about $1,200,000 less than the net surplus for the same period of 1913. In some measure this is due, however, to an increase in the expenditure, that of 1913 being about $3,000,000 while that for the latter half of 1914 was $4,312,002.

The following are the rough figures for the period beginning July 1 and ending December 31, 1914.

Name of Railway	Revenue	Expenses
Peking-Mukden	$6,810,762.09	4,312,002.20
Peking-Hankow	8,496,926.38	4,384,569.77
Tientsin-Pukow	2,750,000.00	4,434,701.89
Chengtingfu-Taiyuanfu	882,124.19	928,438.00
Taokou-Chinghua	289,000.00	411,000.00
Shanghai-Nanking	1,542,150.00	1,890,536.83
Canton-Kowloon	385,000.00	863,259.49
Kirin-Changchun	351,800.00	353,700.00
Chuchow-Pinghsiang	211,400.00	216,100.00
Peking-Kalgan	1,345,262.00	584,382.00
Kalgan-Suiyuan Ext.	251,474.00	151,589.00
Kaifeng-Honan	520,000.00	817,928.00
Canton-Samshui	378,039.11	224,404.74
Changchow-Amoy	17,290.00	49,300.00
Total	$24,231,227.77	$19,621,911.92

THE FINANCES OF CHINA

Pessimists to the contrary notwithstanding, China's financial record for 1914 was excellent and her prospects for the present year are most encouraging. In some quarters it was thought that the inability to raise loans in foreign money markets owing to the war would so embarrass China that she would be unable to meet her foreign financial obligations. So far was this from being the case that she not only met all her foreign obligations due in 1914 promptly from her own resources, but has begun the year 1915 by setting aside ample funds to meet the requirements of internal loans.

From a document issued by the Department of Revenue on February 15 it is learnt that for the first seven months of 1914 the revenue from both the ordinary and the new taxes showed an encouraging increase over the receipts for a similar period in the years 1913 and 1912. During the latter five months, however, there was a great diminution both in imports and exports and consequently the Customs revenue was considerably decreased. If the promise of the earlier months had been fulfilled the Customs revenue would have shown a substantial and satisfactory increase over that obtained in 1913, but owing to the war and the consequent paralysis of trade, the end of the year witnessed a decrease of $5,400,000 in the Customs revenue as compared with 1913. Another fact that was singularly unfortunate for China was the extraordinary high rate of exchange. China's foreign indebtedness has to be paid in gold and consequently she was compelled to pay at least a fifth more as a result of exchange being against her. Notwithstanding all this China was not only able to pay off all her foreign interest obligations but to keep in hand sufficient to meet interest charges falling due in January, 1915. The following table prepared by the Department of Revenue, shows how the foreign obligations were met:—

Loan Obligations. Receipts.—From sums allotted to meet the Loan Obligations by the Chief Commissioner of Maritime Customs from receipts of tax on foreign goods..... Tls. 35,079,055.59

(In the above is included the interest on deposits of tax receipts in foreign Banks, to the amount of Tls. 49,151.99)

From the seven Likin Stations under the control of the Chief Commissioner of Maritime Customs, specially set aside to meet Loan Obligations..... Tls. 2,338,600.00

Total Receipts..... 37,417,655.59

Payments. To Loan dues 25,468,302.07

To Indemnities due 11,949,352.52

Balance in hand 500,127.95

Indemnity Obligations.

Receipts. From balance of Loans .....Tls. 11,449,225.57

From proceeds of ordinary tax specially allotted to the indemnity funds (including Tls. 1,861,306.54 of old deposits and Tls. 4,159.52 of interest.).. 6,205,525.00

From appropriation from Salt Revenue 9,869,172.48

Total Receipts .....Tls. 26,522,923.05

Payments.—To Indemnities 26,522,923.05

Cash Balance in Hand ..Tls. 500,127.95

Another most satisfactory indication of China's ability and willingness to meet her engagements is found in the redemption of a fifth of the Nanking 8 per cent. Military Bonds. On February 20 a public drawing was held in Peking and Bonds to the value of $1,153,528 were redeemed. This must necessarily have a marked effect in increasing the belief of the Chinese themselves in the financial good faith of their Government. This will

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Lung-Tsing-U-Hai Railway:—The extension of the Pienlo Railway eastwards from Kaifeng has been completed as far as Kweitehfu and irregular trains run over a good part of the way. Regular traffic will begin at an early date. The distance from Kaifeng to Kweiteh is nearly one hundred English miles.

China's Railway Loans:—Most of the Railways under the administration of the Ministry of Communications have been built with foreign capital. The yearly amortisation and interest on these loans aggregate a considerable sum every year. With a view to maintaining its credit, the Ministry has met its commitments in respect of these loans with commendable promptitude.

The period that generally proves most embarrassing to the Ministry is, according to the "Peking Gazette," the one covering the months of September, October and November. Within these three months the total commitments maturing for payment reach the large sum of seven million dollars. In normal times it is not altogether easy for the Ministry to meet and pay this sum; but this year the latter has been seriously embarrassed on account of the outbreak of the war in Europe, disorganizing, as it has done, the financial market of the world and causing an excessive rise in the exchange rate.

Through the successful management of the railway affairs of the Government by the Authorities of the Ministry, all moneys due for amortisation and interest on these railway loans have been paid in full as and when the same became due. Moreover the working of the Kin-Han Railway has been so profitable that the Ministry was able in addition to paying the regular interest, to declare an extra dividend in connection with the Kin-Han Railway Redemption Loan issued as a gold loan in London some four years ago. The extra dividend declared for the past financial year was at the rate of $1.479 per $100—the highest on record. We understand that the declaration of this extra dividend has had a most favourable effect on Chinese railway credit in London, coming as it did at a time when other foreign securities have failed to yield their usual dividend to British bondholders. The Minister and the Vice-Minister in charge of railway finance are to be congratulated on the success that has attended the administration of the railways under their charge. The following is a list of the railway commitments paid by the Ministry during the months September—November.

The First Tsin-pu Railway Loan	£125,312.10S
The Second Tsin-pu Railway Loan	„ 75,187.10S
Loans from Shanghai and Hongkong Bank	„ 125,250
The Principal and Interest for Redemption of the Canton-Hankow Railway	„ 114,950
The Shanghai-Nanking Railway Loan	„ 77,192 10S
The Shanghai-Hangchow-Ningpo Railway Loan	„ 37,593 15S
The Kwangtung-Kowloon Railway Loan	„ 37,593 15S
Loan for Redemption of the Canton-Hankow Line	„ 22,554
Loan for Redemption of the Canton-Hankow Line	Y 77,000
Loan for Redemption of the Canton-Hankow Line	$ 19,893
Bonus of the Loan for the Redemption of the Canton-Hankow Line	„ 147,900

The aggregate sums mentioned above are £615,034 Yen. 77,000 and $159,793. The sum total in Mex. dollars is approximately 7,000,000.

Railway Profits:—The Ministry of Communications has given the following account of its revenue and expenditure during this fiscal year:—

1. From the railway department its total receipts amounted to over twenty-seven million dollars and after deducting 15 million dollars for its expenditure, it yielded a net profit of twelve million dollars.

2. From the telegraph department the total receipts aggregated six million dollars and after deducting the expenditure of the said department, it turned out a net profit of two million dollars.

3. From the Post department the total receipts amounted to 4,500,000 dollars and its expenditure about five million dollars.

The Szechuan Railway:—Has been granted permission by the Ministry of Communications to establish a bank and a navigation company.

Railway and Telegraph Materials:—In view of the great amount of materials supplied to the telegraphs and railways in China every year, it is highly necessary for the responsible authorities to study carefully the economical use of the materials, the best way of their preservation, comparison of prices, the quality of goods, etc., so as to get the best advantage in the use of all kinds of materials. With this object in view, Mr. Liang Tun-yen, the Minister of Communications, has organized a commission specially for the study and experiment of railway and telegraph materials. Among the officials appointed to the Commission, are Mr. Lu, the Chief Technical Expert, Dr. C. C. Wang, Chief of the Railway Accounts Department, Mr. Yuan Ling, the Chief of the Department of Railways, and others.

Szechuan Railway Company:—A number of the shareholders of the Szechuan Railway Company have recently submitted a petition to the Ministry of Communications for the punishment of the officers of the said company on account of their misappropriation of funds. The petitioners complain that they are unable to get the principal and interest of their shares and the reason for this, according to the petitioners, is chiefly due to the corruption of the employees of the said company, who have misappropriated the funds of the company for their own use.

Tientsin-Pukow Railway, Northern Section:—It is stated from Peking that Great Britain has opened negotiations with the Chinese Government with a view to taking over the German loan interests invested in the northern half of the Tientsin-Pukow Railway.

Peking-Hankow Railway.—The Ministry of Communications has issued a telegram in connection with the payment of the interest and the profit of the Peking-Hankow Railway for the year 1913. In accordance with the regulations drawn up by the Board of Communications of the late Ching Dynasty, the twelfth payment of the yearly profit of the Peking-Hankow Railway was due on October 19. The net profit of the line during the year 1913 amounted to $4,833,151.52, one-fourth of which is divided among the shareholders. The amount to be divided among the shareholders is $1,288,287.88. The division is to be made in proportion to the total amount of capital, which is Taels 58,000,000, i.e. $1,479 for every bond. The payment of the interest and the profit may be obtained on the presentation of bonds at the agent's offices of the Railway in Peking, Tientsin, Hankow, Shanghai, Hongkong and other places.

New Russian Railway Concession in China.—(A Japanese view) "We are in receipt of news that St. Petersburg lately obtained from Peking the concession to lay a railway line between Aigun and Tsitsihar. Indeed, we are surprised that the Slavs should be able to be so active about extending their national prestiges in Northern China, when they are face to face in another direction with an incident which is a stake against the existence of their nation. Ever since they ceded to us the southern half of the Eastern Chinese Railway, they felt a great military uneasiness in Eastern Siberia and had to lay, for relieving their position, the Amur Railway. When this is completed, they are in possession of the four railway lines, which can co-operate like clockwork,—the Siberian Trunk line, Eastern Chinese line, Amur line and Ussuri line. And now comes another line, which connects the Amur with the Eastern Chinese line. Undoubtedly, this will greatly strengthen the Russian position in the Far East. Moreover, we may be able to obtain similar concessions in that part of Manchuria."

Kalgan and Sui-yuan Railway.—The construction of the Kalgan and Sui-yuan line is progressing rapidly. Some forty miles of the line to the west of Tatung have already been constructed and train service will commence on the 10th instant. On account of the European War, the work was in danger of being hindered. It is reported that a loan of $300,000 was successfully negotiated with a certain Corporation which will be quite enough to supply four months' expenses.

Railway Conference.—During the month of December the Department of Communications convened a conference of railways in China in regard to traffic arrangements. In the conference the Peking-Mukden, Tientsin-Pukow, Shanghai-Nanking, Peking-Hankow and Peking-Kalgan Railways were represented. The conference was held at Shanghai. The representatives in attendance at the conference were:—

Peking-Mukden Railway:—Mr. J. G. Foley, the Traffic Manager; W. H. Steel, Deputy Traffic Manager; and Wm. Handersen, Chief Accountant. Tientsin-Pukow Railway:—T. C. Share, Chief Traffic Inspector and H. Brickner. Chief Accountant.

Shanghai-Nanking Railway:—J. D. Read, Traffic Manager, and E. R. Morris, Deputy General Manager.

Peking-Hankow Railway:—Wang Shih-yu (?), Chief of Secretariat of the Traffic Department, Ho Yung (?), the Traffic Manager, and Pai Lu-yi (?), Chief of the Accountants Section.

Peking-Kalgan Railway:—Chen Pin-lun, the Traffic Manager.

Canton-Kowloon Railway.—Mr. H. T. Foord has been appointed Engineer-in-Chief of the Canton-Kowloon Railway.

Electrification of Tokyo-Yokohama Line a Success.—The trial of electric cars on the new lines between the Tokyo Central Station and the New Yokohama Station at Takashimacho, which took place Nov. 20th proved to be very successful. The new traffic of electric cars will be opened from December 15th, between the new railway stations in Tokyo and Yokohama. This new service, however, does not mean that the steam trains between Tokyo and the present Yokohama railway station near the Benten bridge will be stopped altogether. The steam trains which are specially running between the two cities will be discontinued. The ordinary trains coming from Yokosuka, Kodzu or west of Yokohama will make stops at the present Yokohama railway station, which will continue until June, 1915. After June next year neither steam nor electric trains will come to the present Yokohama railway station until March 1916.

After December 15th the railway line between the new Yokohama central station, and the present one will become a single line. The road along the creek Sakuragawa from the Oye bridge to the Takashimacho station will be extended in width from the present 30 feet to 42 feet. The elevated line between the present station and the new Takashimacho station will be completed by the end of March 1916, and after that electric cars will run between the Tokyo Central Station and the present Yokohama station. The Yokohama station will be completed in June next year, and the present Hiranuma station will be retained until then for the Tokaido express service.

Extension of Private Railways.—The *Tokyo Asahi*, which is opposed to the State ownership of the railways, calls the attention of the authorities to the advisability of amending the regulations so as to make it possible for private undertakings to construct or extend the lines which are unfinished. The Government on account of the war is not expected to be able to supply fresh funds for railway construction, but the paper thinks that if private undertakings be permitted to take up the work, it may be quite possible to be carried out and the country's railroads may thus be made to realize development which cannot be expected of the Government under the present circumstances.

Kalgan-Dolonor Project:—General Ho Chung-lien, Tartar-General of Chahar, has recently submitted a request to the Government, stating that in view of the commercial and strategical importance of both Kalgan and Dolonor, these two cities should be connected with a railway by prolonging the Kalgan-Hsuiyuan branch line to the latter city. On receipt of this request the Government deems this measure as absolutely necessary for commercial and military facilities and has referred his request to the Ministry of Communications to be carried into effect. It is said that the projected branch line will traverse a distance of 360 li and will not cost the Government very much to build.

Chefoo and Lungkow Projects:—Peking, Nov. 24.—A keen competition is being held between the Chinese capitalists for the right for the construction of two railways, one from Chefoo to Weihsien and the other from Lungkow to Weihsien, and both parties have sent their representatives to Peking to canvass among the government authorities at Peking. It is reported that the authorities of the Department of Communications are of opinion that any of the railways, if to be constructed, should be constructed with Chinese capital and not with borrowed money.

Mr. Lu Chen-chang, adviser to the Foreign Office, has received instructions from President Yuan Shih-kai to proceed to Shantung for an inspection, and he will start on the mission in a few days. His mission is to inspect the city of Tsingtau in order to gather materials for diplomatic negotiations in the future. Mr. Tzo, Vice-Minister for Foreign Affairs, is reported to accompany Mr. Lu to Tsingtau. (Chuwo)

The Chefoo-Weihsien Railway:—It is said that the merchants and gentry at Chefoo have recently held a meeting discussing their scheme for the construction of the projected Chefoo-Weihsien railway. The merchants and gentry are unanimously of the opinion that as this railway concerns the vital interest of Shantung in the future, it is imperative for them to petition the Government, asking the latter to grant them the right to build the said railway with entirely Chinese capital.

Railway Fortifications:—The *Army and Naval Journal* says that the Government has proposed to fortify Shanhaikuan and Chengchow, which are situated on the line of the Peking-Mukden Railway. As the railway is an important line from a military point of view, and it is along Pehai Bay, somebody proposed to build fortifications at important points some time ago. The journal continues that as the construction of such forts are of vital importance, the Government has wired to the Chiang Chuns of Fengtien and Chihli instructing them to send officials to survey these places and make a report as to the detailed expenses involved in the construction work.

Chihli Railway Project:—The local gentry of Chihli have now promoted a railway company for the construction of a line from Wen An Hsien to Liang Hsung Hsien, a distance of more than 200 li, connecting the northern section of the Tientsin-Pukow Railway and the Peking-Mukden line. The scheme of such an enterprise is to facilitate transportation purposes. All districts along the proposed line are well known for their products, rice, provisions, and coal.

The Nanking-Changsha Railway:—As has already been projected by the Government, the Nanking-Hunan Railway will be divided into sections, and the whole line will start from Hangchow, the capital city of Chekiang, and terminate at Changsha, the capital city of Hunan. The first section will comprise both the Hangchow-Shanghai and Shanghai-Nanking Railways, and the second from Nanking to Nanchang, is awaiting construction. The third section will consist of the Nanching-Kiukiang and the Hunan Railways. All these railways have been nationalised. A few days ago the Ministry of Communications sent a party of officials to the South to make an investigation into the projected lines of the said railway.

Nanking-Changsha Railway:—The Managing Director's office for the Ning-Hsiang Railway, a line from Nanking to Changsha, has been opened at Nanking under the directorship of Mr. Sun Tau-yueh (Mr. Clarence Sun). Its establishment is composed of three departments, general, accounts and construction and three chiefs also are to be appointed by the Board of Communications, Messrs. Yui Yeh-chang, Hu Kwei-chao and Lin Chik-chin. It is understood that the British syndicate has only advanced an amount of loan sufficient to meet the expenses for the maintenance of the railway office and the making of surveys for one year.

South Manchuria Feeders:—An agreement was recently signed between the S. M. R. Co. and the Penchihu Colliery & Mining Co. to construct and manage conjointly a railway from Penchihu to Chienchang. In what proportions the required capital is to be produced by the two Companies remains unsettled. The concession for the same has, we understand, been secured from the Peking Government. The proposed line may be regarded as a mining railway, and, pending the satisfactory exploitation of markets for the outputs of Niuhsintai and other collieries along the proposed route, no work will be taken in hand. At present a light rail line runs from Penchihu to Niuhsintai, a distance of about 9 miles. This may be extended, as the requirements may justify, to Chienchang, about 60 miles from Penchihu, or the whole line may be superceded by a standard gauge line, when the economical assets of the country have sufficiently grown.

The Canton-Hankow Railway:—The Wuchang correspondent of the *N.-C. Daily News* writes:

"During the year splendid progress has been made with the railway. It passes the city near the east gate and runs straight across a shallow lake to the Yangtsze. A small hill is being demolished to provide the material for the embankment which crosses the lake, and hundreds of men have been at work blasting digging and carrying.

"Years ago a small railway was built by Chang Chih-tung from the Yangtsze, for carrying copper to the mint and truckloads of copper cents back to the river to be distributed all over China. Those were happy days for the Government, when three copper cash could be melted down and minted into the new coin which represented ten of the old cash. The mint was so extensive that in a few years all the copper in the world could be converted into copper cents. But there is a limit to the most successful attempts to debase the coinage, and in spite of the Viceroy's eloquent appeals, a limit had to be placed by the Central Government upon the output of the mints. And this none too soon, for the dollar, which at one time exchanged for about 800 cash, was exchanged for 1,300, and wages and prices reckoned in cash went up accordingly. So there was no need of a railway to carry the copper.

"The old railway ran beside the lake outside the city, entered the east gate and to the great inconvenience of everybody, ran all along the carriage road, from the gate to the mints in the centre of the city. Since the Revolution most of the lines were taken up inside the city, and the lake was allowed to wash away the embankment and for half a mile or so, the rails and sleepers were suspended in mid air, or collapsed entirely. But within the last week or two the embankment has been repaired and new sleepers and rails laid, but for what purpose we know not."

Inner Mongolian Railways:—The Government has proposed to construct new railway lines outside the Great Wall in order to facilitate communications. The termini of the proposed lines are the several places which are to be opened as trade ports, such as Chifeng, Taonanfu, Dolonor, etc. The first line is from Peking to Jehol, the mileage of which is 140 miles, with a line from Jehol to Chiefeng of 130 miles and another line of 180 miles running from Chingchow to Chifeng. The other lines are from Kalgan to Dolonor of 150 miles and from Dolonor to Chifeng of 200 miles. The total mileage is 800. These lines will be connected with the Peking-Mukden and the Peking-Kalgan Railways. The scheme is now under the consideration of the Ministry of Communications.

First Standard Gauge Railway Engine:—Designed and Built at South Manchuria Railway Workshops. On October 30th, a trial trip was successfully made of a new Railway Engine on the main line of the South Manchuria Railway, on the following schedule:—

Lv.—Dairen ..... 1.05 p.m.

THE FAR EASTERN REVIEW

COMMERCE :-: ENGINEERING :-: FINANCE

VOL. XI. SHANGHAI, MARCH, 1915 No. 10

THE STRUGGLE FOR THE MANCHURIAN RAILWAYS

A Precis of the Diplomatic and Military Combats leading to Japan's Dominance in South Manchuria

By securing from China the control and administration of the Kirin-Changchun Railway, an extension of the agreements governing the South Manchuria and Antung-Mukden Railways, as well as the refusal of foreign loans for railway purposes in South Manchuria, Japan has the satisfaction of knowing that she is now dominant in the country so far as railways are concerned even if she is eventually unable to extract from China the consent necessary to establish her overtly in a supremely favored position politically. In another article in this issue the progress of the negotiations which have been proceeding between Japan and China are specially dealt with. Here it is intended merely to refer to the railways concerned. They are interesting inasmuch as they have constituted the basis in the past of much international heart-burning, and, in fact, of strenuous and dramatic political wire-pulling. By now acquiring practical mastery of them Japan is able to write finis to a long and vicissitudinous chapter of Manchurian history, and some other nations may be able to shed a tear of poignant regret upon the grave of great ambitions. Statesmen of both Russia and America once entertained dreams of exercising considerable influence over the rich territory comprising the cradle of the Manchu race, but it seems that Destiny had marked it out that if any foreign Power should usurp the rights and prerogatives of the Chinese nation that Power should be Japan. And the Japanese people, too, have ever professed the belief, and laboured to materialise the belief, that they were the ones chosen to supervise, if not actually control, the development of the region. Their success against the arms of Russia was complacently accepted by them as Providential recognition of their title to a just heritage. Nor were the claims of China, the aeons of occupation by the Manchus, or the protestations of Occidental nations possessed of distinct treaty privileges permitted by the Japanese to stand in the way of the consummation of their plans to acquire a full and free ascendancy. They have worked steadily and well. Not even the severest critic will gainsay that; nor will the critic minimise the praise that is due them for improving the economic conditions wherever they have set to work to reform or develop them, malgre that the efforts have been bentt of avour Japan rather than to be made universally profitable.

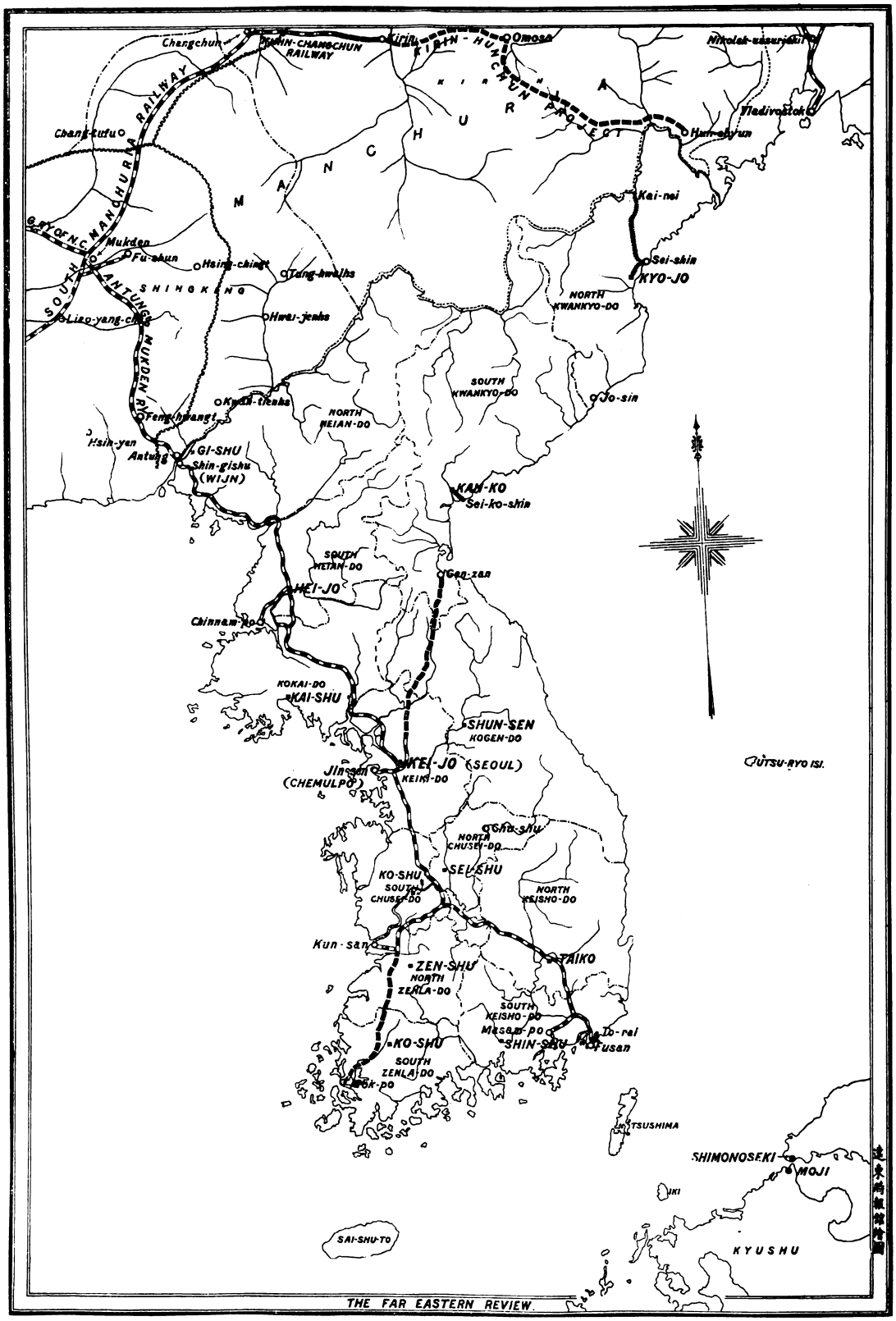
The doctrine of equal opportunity so readily affirmed by Japan has been subordinated to the needs of national ambition unwittingly or deliberately until writers like Mr. J. O. P. Bland are able with justification to lament that certain articles of the Treaty of Peace between Japan and Russia, the instrument whereby Japan received legal title to her inheritance of the leases of Port Arthur and Dalny and the immediate littoral, "possess only a melancholy retrospective interest to-day, having served merely to demonstrate the futility of Treaties that clash with the interests of the strong." Yet high Japanese publicists declare themselves able conscientiously to declare that Japan as a nation has taken no improper advantage of her influential position, and that she stands as one of the foremost exponents of the doctrine of the "open door" and the champion of the independence and integrity of China. Commercial men of other nationalities will, on the other hand, affirm that since Japan has secured control of the railways of Manchuria there has been unblushing discrimination against them, and on that count alone the opinion has grown, rightly or wrongly, that Japan's dominance in Manchuria is prone eventually to exacerbate large sections of the world's manufacturers desiring to participate in the markets of this region. It is, however, now possible for Japan arbitrarily to correct any of the wrong impressions that have gained a hold upon the minds of certain people, and if Japan does act so as to inspire confidence in her "open door" pledges there will be none among foreign nations who will begrudge her the pre-eminent position she has so laboriously acquired.

Entry and Exit of Japan.

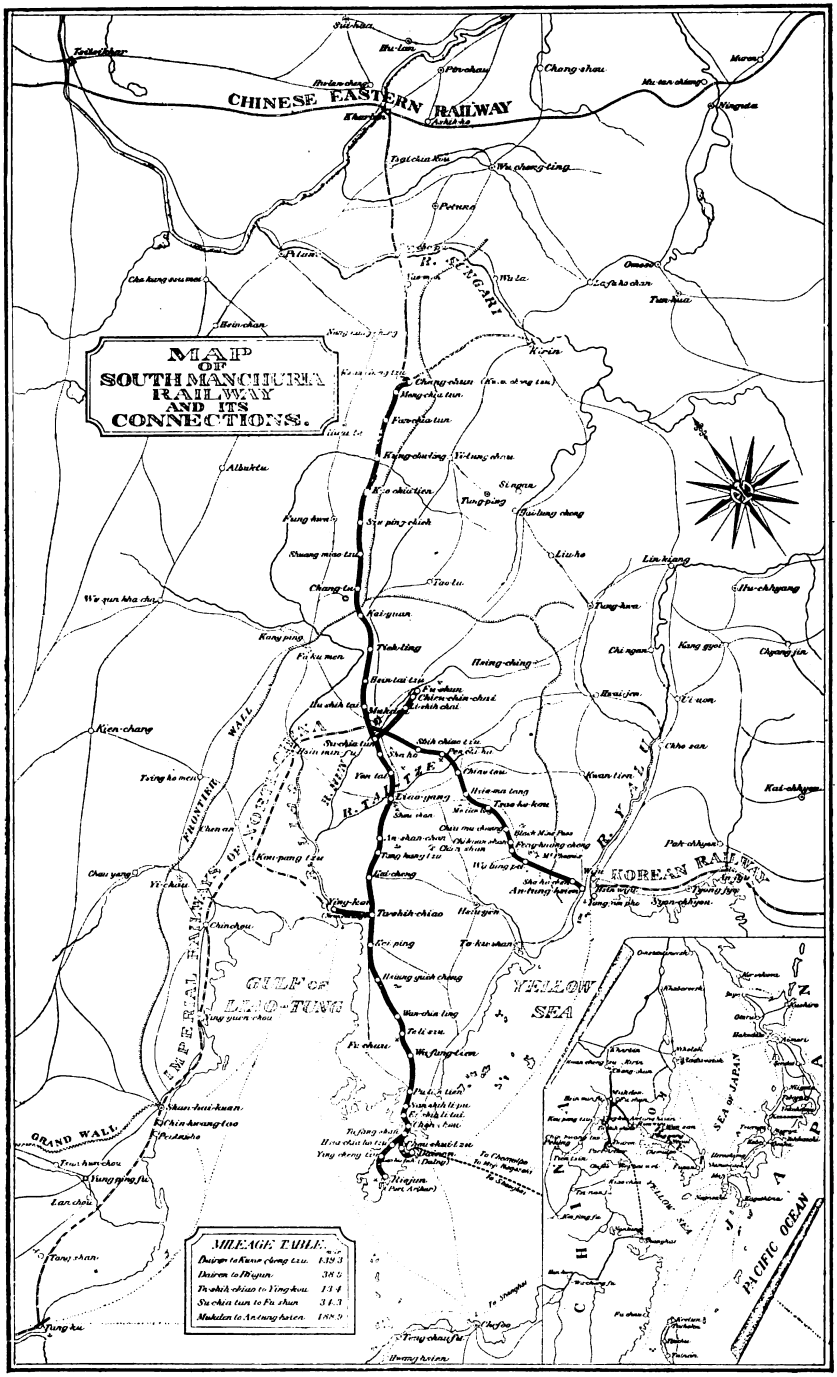
She will have succeeded where some of them have failed. Russia aimed at procuring for herself what Japan previously acquired, was prevented from holding, and now virtually possesses, but something of finesse was lacking in Russian diplomacy and the war with Japan was precipitated in 1904, ten years after the war which Japan victoriously conducted against China and by virtue of which she gained the southern portion of the province of Fengtien. In the Treaty of Shimonoseki, signed on April 17, 1895, China, among other things, ceded to Japan "in perpetuity and full sovereignty together with all fortifications, arsenals, and public property thereon":—

> The Southern portion of the Province of Fengtien within the following boundaries: The line of demarcation begins at the mouth of the river Yalu, and ascends that river to the mouth of the river Anping; from thence the line runs to Fenghuang; from thence to Haicheng; from thence to Yingkow (the port of Newchwang) forming a line which describes the southern portion of the territory. The places above named are included in the ceded territory. When the line reaches the river Liao at Yingkow it follows the course of that stream to its mouth where it terminates. The mid-channel of the river Liao shall be taken as the line of demarcation. This cession also includes all islands appertaining or belonging to the Province of Fengtien situated in the eastern portion of the Bay of Liaotung and in the northern part of the Yellow Sea.

The territory thus ceded to Japan was the Liaotung Peninsula, the chief ports in the south being Port Arthur and Dalny, and believing that she would enjoy full and free possession

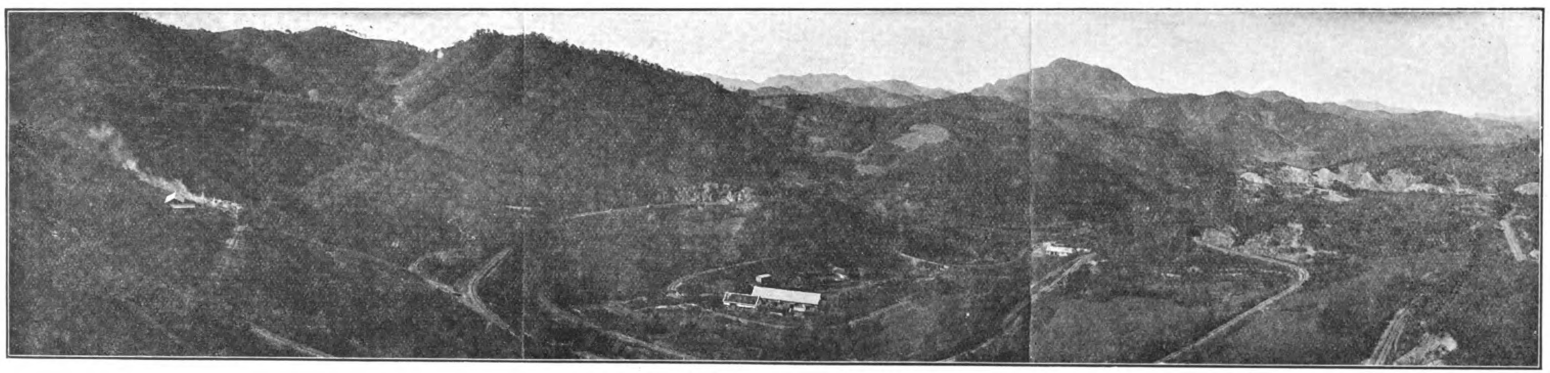


MAP SHOWING THE RELATION OF THE ANTUNG-MUKDEN, THE KIRIN-CHANGCHUN AND THE KOREAN RAILWAYS TO THE SOUTH MANCHURIA RAILWAY.



MAP OF SOUTH MANCHURIA SHOWING CONNECTIONS WITH CHINESE EASTERN AND KOREAN RAILWAYS AND THE CHINESE GOVERNMENT LINE FROM MUKDEN TO PEKING.

Panorama of Antung with the Yalu River in the distance.



The Antung-Mukden Railway—Black Mine Pass.

of legitimate spoils of war, she is not to be blamed for indulging in lavish thoughts of empire building. She reckoned without other Powers, however. Russia had distinct ambitions with regard to Manchuria, as it provided the way to an ice free port, and other nations had reasons for keeping Japan from settling there though they were willing enough that she should ultimately take Korea. Russia, Germany and France, therefore, combined to force Japan to relinquish her acquisition, and although the ratifications of the Shimonoseki Treaty were exchanged at Chefoo on May 8, 1895, Japan succumbed to the inducements of the nations mentioned and relinquished the ceded districts on the ground that their retention by Japan "would be detrimental to the lasting peace of the Orient." A Convention for the retrocession of Liaotung was consequently signed between China and Japan on November 8, 1895, the Chinese undertaking to pay 30,000,000 Kuping Taels before November 16, 1895. This was done, and by November 30 the evacuation of Manchuria by the Japanese was commenced, and was completed in December.

Russia and the Cassini Convention.

The Japanese were thus prevented from developing Manchuria as their prize of the war, and no sooner were they out of possession than Russian emissaries became active in laying foundations for the building of railways in Manchuria to connect the trans-Siberian system with the sea at Dalny and Port Arthur. Principal among these was Count Cassini, the Russian Minister at Peking, who, in 1896, is reputed to have secured an agreement with the Chinese Government for the building of the desired railways. Premature publication of the document—which was known as the Cassini Convention—and consequent excitement among other Powers led to denials of its existence both by Russia and by China. This Convention, however, opened the question definitely of a railway through Manchuria, and as a matter of historical interest the clauses dealing with railways may be quoted. The preamble sets out that the officials appointed to negotiate the convention were to consider certain matters concerning the connecting of the railway system of the Three Eastern Provinces (Fengtien, Kirin and Heilungkiang) with that of the Imperial Russian Railway in the Province of Siberia, with the object of facilitating the transport of goods between the two Empires, and of strengthening the frontier defences and sea-coasts; and furthermore to agree upon special privileges to be conceded by China to Russia as a response to the loyal aid given by Russia in the retrocession of Liaoyang and its dependencies. The articles of special interest were:

1.—Owing to the fact that the Russian Great Siberian Railway is on the point of completion, China consents to allow Russia to prolong her railway into Chinese territories (a) from the Russian Port of Vladivostock into the Chinese city of Hunchun, in the Province of Kirin, from thence northward to the Provincial capital of Kirin, and (b) from a railway station of some city in Siberia to the Chinese town of Aigun in Heilungkiang Province, from thence south-westward to the Provincial capital of Tsitsihar, and from thence to the town of Petune in Kirin Province, and from thence south-eastward to the Provincial Capital of Kirin.

2.—All railways built by Russia into the Chinese Provinces of Heilungkiang and Kirin shall be built at the sole expense of Russia and the regulations and buildings thereof shall be solely on the Russian system, with which China has nothing to do, and the entire control shall be in the hands of Russia for the space of thirty years. At the end of the said period China shall be allowed to prepare the necessary funds wherewith, after proper estimation of the value of the said railways, she shall redeem them, the rolling stock, machine shops, and buildings connected therewith. But as to how China will at that date redeem these railways shall be left for future consideration.

3.—China is now in the possession of a railway, which she intends to extend from Shanhaikwan into the Provincial Capital of Fengtien—namely Mukden (Shengking), and from Mukden to the Provincial Capital of Kirin. If China should hereafter find it convenient to build this road she shall allow Russia to provide the funds to build the railway from the city of Kirin on behalf of China, the redemption of which road shall be permissible to China at the end of ten years. With reference to the route to be taken by this railway, Russia shall follow the surveys already made by China in connection therewith, from Kirin to Mukden, Newchwang, etc.

4.—The railway to be built by China, beginning from Shanhaikwan, in Fengtien, to Newchwang, to Kaiping, to Chinchow, to Lushunkou (Port Arthur), and to Talienwan and their dependencies, shall follow the Russian railway regulations in order to facilitate the commercial intercourse between the respective Empires.

While the above articles are the only ones dealing with railway routes, others provide for railway guards, etc., and *en passant* it may be noted that provision is also made for Russia to lease the port of Kiaochau for fifteen years, and to assist China to fortify Port Arthur and Dalny, Russia to "lend all necessary assistance in helping to protect these two ports, and shall not permit any foreign power to encroach upon them." As has been mentioned, the signature of this Convention was denied by the Powers concerned in it, but that it was drawn up for signature if not actually signed, sealed and delivered, is regarded as certain by those who ought to know. Its suppression did not by any means deter or disturb Russia in the development of her designs to secure a railway through Manchuria, and balked in one direction she readily turned to another.

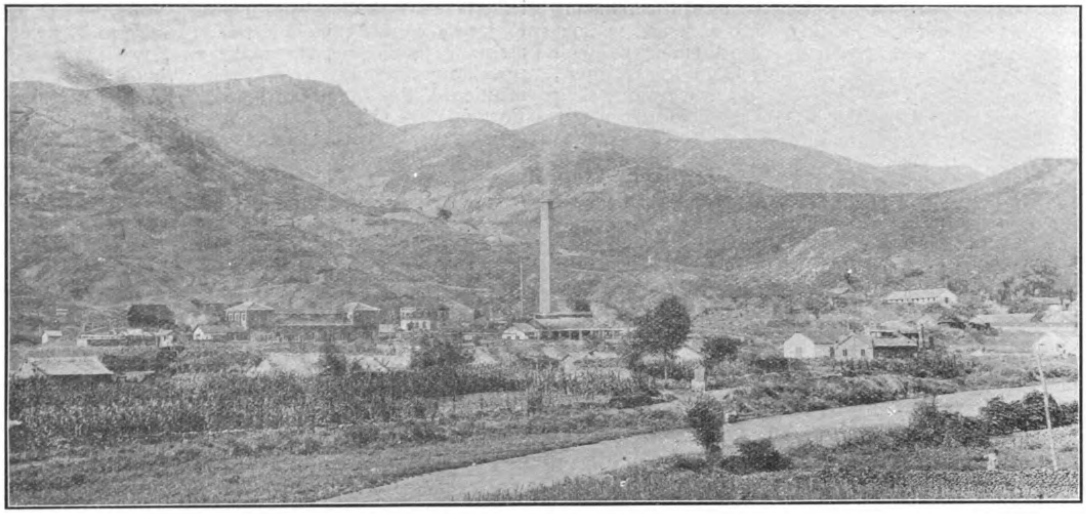
Birth of the Chinese Eastern Railway Co.

The representatives of the Russo-Asiatic Bank became active in negotiations with the Chinese and on September 8, 1896, concluded an agreement with the Chinese Government for the formation of "the Chinese Eastern Railway Co., for the construction and working of a railway within the confines of China, from one of the points on the western borders of the Province of Heilungkiang to one of the points on the eastern borders of the Province of Kirin, and for the connection of this railway with those branches which the Imperial Russian Government will construct to the Chinese frontier from Trans-Baikalia and the Southern Ussuri lines."

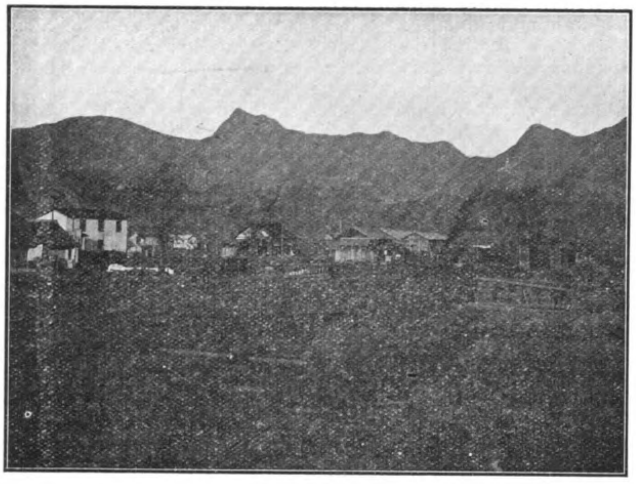
It is noticeable that the agreement contained no definite mention of the Manchurian railways specified in the Cassini Convention, but subsequent developments showed that they were kept in mind. Points of interest that the Agreement did contain, however, were that the Chinese Eastern Railway Company should have the right to exploit coal mines and other mining and industrial enterprises; that the shares of the Company should be owned only by Russian and Chinese subjects; that the Company should only retain possession of the Chinese Eastern Railway during the course of eighty years from the day of opening the traffic along the whole line, the railway then to revert to the Chinese Government without payment; that on the expiration of thirty-six years from the time of completion of the whole line and its opening for traffic the Chinese Government should have the right of acquiring the line on refunding to the Company in full all the outlays made on it, and on payment for everything done for the requirements of the railway; that the line should be completed not later than six years from the time when the direction of the line should be finally determined and the necessary land assigned to the Company; that the capital of the Company should be fixed at five million nominal credit roubles, divided into 1,000 shares at 5,000 nominal credit roubles, the remaining portion of the capital to be formed by the issue of bonds; that the gauge should be the Russian gauge of five feet.

Possessed of this agreement, the Russo-Asiatic Bank formed the Chinese Eastern Railway Company, and surveys were made, the first sod of the Manchurian Railway being cut at a point on the eastern frontier of the Province of Kirin and the Primorsk on August 28, 1897.

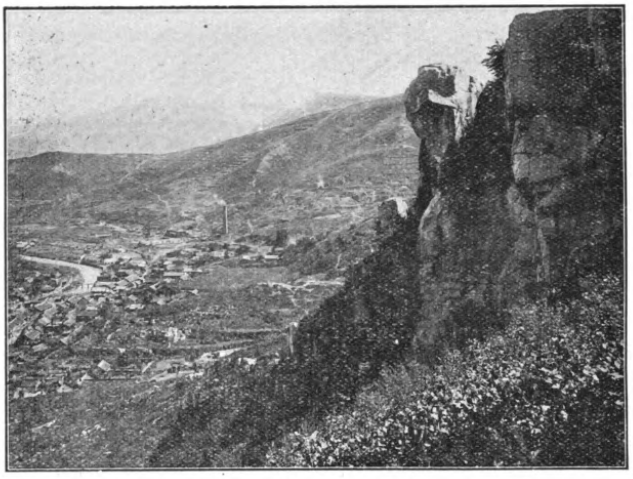
Meanwhile the Russian diplomats were engaged in arranging with China for the lease of Port Arthur and Dalny, and on March 27, 1898, an agreement was signed giving effect to this desire. This permitted a definite objective being obtained for the railway. In order to extend the Russian line to Port Arthur and Dalny an agreement was entered into at St. Petersburg on July 6, 1898, between the Chinese and Russian Governments giving the right for the construction of a branch line. Article 1 stipulated that the branch should be known as the South Manchurian Branch of the Chinese Eastern Railway. Other articles provided that the Company should be given facilities to transport materials by land or water for the railway; that they should be permitted to build temporary branch lines from the Southern Manchurian line to Yingkou and seaports in the neutral zone, but when the work of building the railway was completed and the whole line opened to traffic all these temporary branch lines should be removed at the pleasure of the Chinese Government. The agreement also provided that the Company should have the right to fell timber, mine coal, and establish a steamship line. It was also stipulated that Russia should have the right to fix Customs duties in the leased territory on the Liaotung Peninsula. By the spring of 1898 a site was selected near



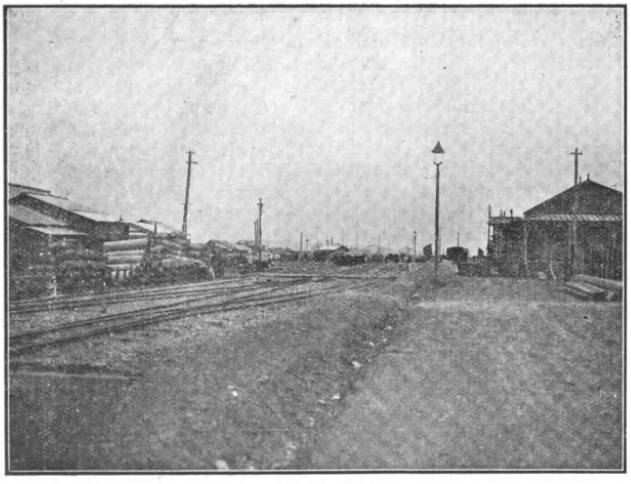
Penchihu Colliery on the Line of the Antung-Mukden Railway.



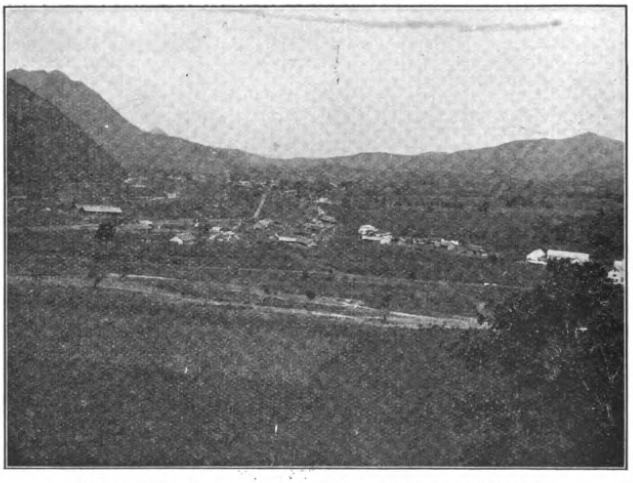
Penchihu Station.



Penchihu Town and Colliery.



Railway Station at Antung.



View of Tsaohoku; midway between Antung and Mukden.

Newchwang, on the Liao River, as the terminus of a branch line to be constructed to connect Port Arthur and Dalny with the Manchurian railway. This short line was completed in 1899 and work on the main line southwards to Port Arthur and northwards to Mukden was begun, and by 1900 the railway from Harbin to Port Arthur was practically completed with the exception of a number of bridges. During the Boxer rising much of the line was destroyed, but upon the suppression of the movement work was vigorously renewed and by the fall of 1901 the entire Chinese Eastern Railway connecting the Trans-Siberia with Vladivostock across Manchuria, and the line south from Harbin to Port Arthur was completed. This system in Manchuria in all measured some 1,600 miles, and is stated to have cost the Russian Government 300,000,000 roubles, or roughly $90,000 gold, per mile. And in addition to this Russia is stated to have expended another 250,000,000 roubles in building Port Arthur, Dalny, Harbin, fortifications and other enterprises outside the strictly railway work.

The Trend of Russian Diplomacy.

In the minds of those who conceived the great project, however, it was worth the money. It provided Russia with a railroad to an ice free port, and opened the way to supremacy in Manchuria and Peking and the ultimate absorption of Korea, a Russian dream of the period. Up to 1900 Russian diplomacy had worked, according to Mr. Putnam Weale in his "Reshaping of the Far East," to accustom China to three "grand points of view." The first was that Russia, "being without any convenient bases in the Far East free from ice all the year round, must be granted some port, or ports, which she could share with China. The second, leading as it were to the third, was that unless Russia were able to exert her great strength as a land Power her friendship with China could not take the form of material support in case a fresh crisis in the Far East should arise, and Japan attempt to repay China for calling in the help of the West. And the third and concluding point was this: In order to bring her myriads of soldiers to the Far East, Russia had already begun, years before the Japanese war, a grand trunk railway at great expense to herself; but as the railway would have to follow the northern bank of the Amur River it would be indefinitely delayed unless a more convenient route could be granted by generous and magnanimous China, who had already bestowed the Primorsk. . . . In the Cassini Convention we see all these points of view in their crude and undeveloped shape. . . . But the premature publication of the document changed the programme materially. Instead of a vague whole, a definite chain was now substituted link by link, as opportune moments presented themselves, and it was only due to disastrous 1900, which surprised every one from the Manchus to the Muscovites, that the proper methodical development of daring things was upset and hopelessly deranged. . . . . A whole volume might be filled tracing in great detail the curious process through which Russian diplomacy was forced to go from the moment of the Boxer rising to the outbreak of the great war (between Russia and Japan). . . . . Prince Tuan (whose party usurped the Government of China) declared a special war against Russia, in special edicts, ordering all Russians to be driven out of Mongolia and Manchuria. Russia again retorted by invading Manchuria and occupying the capitals, carrying fire and sword everywhere. . . . Finally Russians, in company with the troops of all nations, entered Peking. . . . During 1901 Russia had three distinct and separate roles to play in China: the part of ally to all Europe; the part of China's dear and secret friend in Peking; and the part of Manchuria's real master in the invaded provinces; whilst over and above in Europe she had to quiet the secret fears of numerous Chancelleries busily inquiring as to her real plans in the future. . . . . Parties in the Manchu Court began to raise their voices and earn merit safely by pointing out that it was incompatible with Chinese dignity to allow Manchuria, the cradle of the reigning dynasty, to remain in foreign hands. To the chorus of these voices the vernacular and English press in the Far East added its quota. . . . By the spring of 1902 matters had reached such a pitch that Russia had to cease acting so many different and ill-assorted roles and sign unconditionally the Manchurian Evacuation Agreement of the 8th of April, 1902. . . . . By 1903 Russia was assured that neither England nor America, in company with Japan, were prepared to go to the same lengths as Russia herself had done with France and Germany in 1895 over the Liaotung peninsula business, and therefore Russia was not unhappy. . . . The immediate consequences of the 1900 outbreak was to see Japan's position in regard to China vastly improved. . . . A party sprang into existence (in Peking) which openly favored a pro-Japanese policy in place of the former Russian *entente cordiale*, and the continuous presence of the Russians in Manchuria was responsible for the continuous quoting of that old Chinese proverb, whose origin is shrouded in the mists of antiquity, 'Do not fear the cock from the south but the wolf from the north.' . . . But it was with considerable surprise that both the Chinese Government and the Chinese press finally realized by the summer of 1903 that Japan had actually commenced direct negotiations with Russia and was determined to press for a definite understanding on all disputed points in the Far East."

Long before this, however, Japan had misgivings with regard to Russia's aggressive policy in Korea. Japan's situation in that country, too, had been jeopardised owing to the complicity of certain Japanese in the assassination of the Korean Queen, and it was not without difficulty that Japan had succeeded in arriving at a temporizing arrangement with Russia by means of the Yamagata-Lobanow Convention of 1896, the Komura-Weber Memorandum of 1896, and the Nishi-Rosen Protocol of 1898. This strained relation between Japan and Russia was aggravated by the latter's occupation of Manchuria after the Boxer trouble, and the negotiations above mentioned culminated in the war between Japan and Russia in 1904.

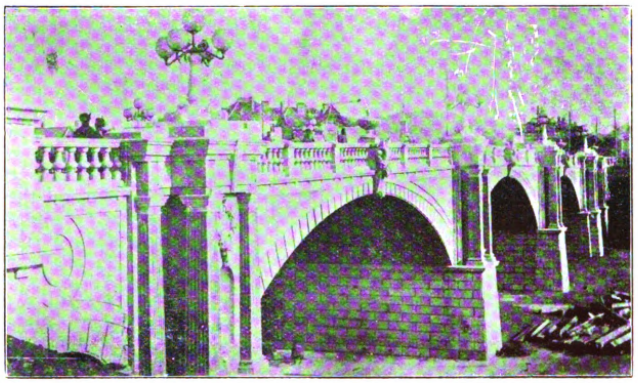
The Ejection of Russia.

Russia, to the surprise of the world, was defeated by Japan, and by virtue of the Treaty of Peace signed at Portsmouth, United States, on September 5, 1905, Japan came back into what she regarded as her own. The Treaty *inter alia* set down that Russia agreed that all rights possessed by her under the lease of Port Arthur and Dalny were to revert to Japan; Manchuria was to be evacuated simultaneously by both parties, and China was to be unhampered there in her methods of developing the natural resources of the country. Along the line of the railway through Manchuria separate zones were to be marked out and each of the contracting nations was to be supreme within its own sphere. The section of the Manchurian railway thus acquired by Japan was that extending from Changchun to Port Arthur and Dalny.

Article 6 of the Portsmouth Treaty, which dealt with the railway transfer, is as follows:—

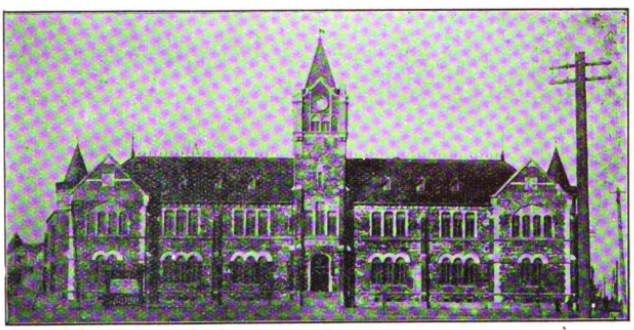
> The Imperial Russian Government engage to transfer and assign to the Imperial Government of Japan, without compensation and with the consent of the Chinese Government, the railway between Changchun (Kuan-cheng-tzu) and Port Arthur and all its branches, together with all rights, privileges, and properties appertaining thereto in that region, as well as all coal mines in the said region belonging to or worked for the benefit of the railway.
>
> The two High Contracting Parties mutually engage to obtain the consent of the Government of China mentioned in the foregoing stipulation.
>
> Japan and Russia engage to exploit their respective railways in Manchuria exclusively for commercial and industrial purposes and in no wise for strategic purposes.
>
> It is understood that restriction does not apply to the railway in the territory affected by the lease of the Liaotung Peninsula.
>
> The Imperial Governments of Japan and Russia, with a view to promote and facilitate intercourse and traffic, will as soon as possible conclude a separate convention for the regulation of their connecting railway services in Manchuria.

As a corollary to the Portsmouth Treaty a Treaty was signed in Peking on December 22, 1905, by China and Japan, definitely arranging points touched upon in the Portsmouth Treaty. To the Treaty it is said that a secret Protocol was attached containing sixteen articles dealing with the South Manchuria Railway, one of the articles being that the Chinese Government should not, with the object of protecting the interests of the South Manchuria Railway, construct prior to the recovery by them of the said railway, any main line in the neighbourhood of and parallel to that railway, or any branch line which might be prejudicial to the interest of that Railway. This clause is interesting inasmuch as

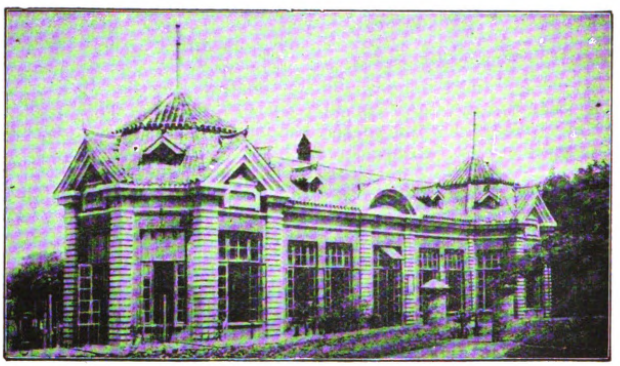


Nippon Bridge at Dairen.

View Across Nippon Bridge.

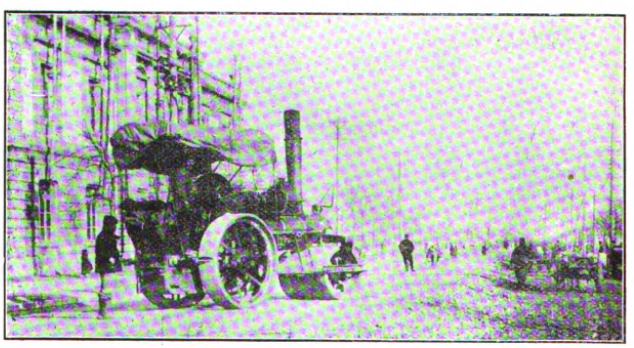


Civil Administration Building.

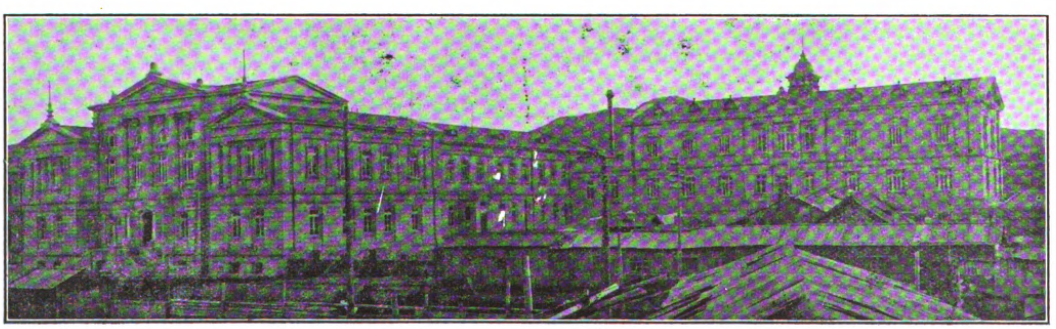


Laboratory Building, Dairen.

Kambu Street, Dairen.



Road Making, Dairen.



General Offices of South Manchuria Railway, Dairen.

it was used as the excuse for the strenuous efforts ultimately made to prevent the building of other railways by American and British interests. Another point in the Treaty which also ultimately developed into a warm wrangle, this time between China and Japan, was that giving Japan the right to maintain and work the military railway constructed between Antung and Mukden, which will be referred to later.

Japan was working for a thorough clearing up and adjustment of the railway questions in the territory over which she felt she was destined to dominate, and on April 15, 1907, she concluded another agreement with China for the purchase by China of the railway constructed by Japan between Hsinmintun and Mukden for Yen 1,600,000, and for the construction of a railway between Kirin and Changchun, which will be referred to later under that caption. Another agreement was signed in 1908 in which China agreed to extend the Kirin-Changchun railway to Yenchi and to connect it at Hoiryong with a Korean railway, and on the same date a further agreement was made settling other railway points, one being that the Chinese Government would not construct a railway from Hsinmintun to Fakumen without consulting Japan. On November 12, 1908, still another agreement was made with regard to the Kirin-Changchun railway, this time making provision for a loan for the work.

Mention of the Hsinmintun-Fakumen railway above brings us to a question which caused grave difficulties and involved the Japanese in hot newspaper controversy with British and American interests. It also afforded demonstration that undertakings in Treaties are not necessarily made with the object of ultimate fulfilment. For instance the Treaty of Portsmouth bound the signatory Powers "not to obstruct any general measures, common to all countries, which China may take for the development of commerce and industry in Manchuria," yet Japan subsequently secured from China, as mentioned above, the agreement not to build any railway which might be detrimental to the South Manchuria Railway. This agreement with Japan jeopardised the rights of China which were fully protected by the Portsmouth Treaty, and Japan took full advantage of it when an agreement was entered into between the Governor of Mukden (Mr. Tang Shao yi) and Lord French, representing Messrs. Pauling and Company, of London, and Mr. J. O. P. Bland, representing the British and Chinese Corporation, for the construction and financing of the Fakumen extension of the Imperial Railway of North China. Despite the torrent of abuse that flowed upon Japan from certain sections of the British and American press Japan was, however, able to have the agreement suspended, and thereby removed what would ultimately have proved a nasty thorn from her side.

America's Advent in Manchuria.

But to give a fuller understanding of the entrance of other interests into the preserves of Japan in Manchuria it may perhaps be as well to give a summary of the events as written by Mr. J. O. P. Bland in his excellent work, "Recent Events and Present Policies in China." Mr. Bland, at the time of the happenings, represented the British and Chinese Corporation in Peking, and therefore should be well-equipped to speak. A statement of his account of the events is as follows:

> Immediately after the signature of the Portsmouth Treaty the American Railway magnate, Mr. E. H. Harriman, concluded with Marquis Ito and Marquis Katsura, a Memorandum of Agreement for joint American-Japanese ownership and working of the South Manchuria Railway, together with the various coal, timber and mining concessions which the Russians had extracted from Chinese officials. This joint working scheme, to be financed with American capital, was to form a link in Mr. Harriman's projected round-the-world transportation system, but it came to nothing owing to the conclusion of the Peking agreement of December 22, 1905, which put an end to the open-door shibboleths of the Portsmouth Treaty. Upon the conclusion of that agreement Count Komura telegraphed to Tokyo and Mr. Harriman was duly informed that the Chinese Government would not consent to the admission of American capital to the South Manchuria Railway system, desiring themselves, in due course, to join the Japanese in working it! In the light of subsequent events, however, we are justified in concluding that Count Komura, fully appreciating the actual strength of his country's position and the probable tendency of world's politics in the future, thought it advisable to keep Manchuria free from American "entanglements" and the prospects of joint control. As events proved, Japan had no difficulty in raising in England the capital required for the restoration of the South Manchuria Railway; and with characteristic *savoir faire*, she spent a considerable part of this loan in purchasing railway equipment in the United States. No more was heard, for the time being, of Mr. Harriman's scheme, but the idea was germinating, nevertheless, at the State Department, and was to bear its fruit in due season.
>
> In the summer of 1906 Russian officials connected with the Chinese Eastern Railway approached American capitalists with a proposal to sell that line, and negotiations of a desultory kind proceeded at intervals until the autumn of 1909, when Mr. Secretary Knox's "neutralisation scheme" completely changed the situation and precipitated the Russo-Japanese entente.
>
> In the meanwhile, the Chinese Government, represented by Mr. Tang Shao-yi, realising the significance of Japan's disinterested friendship, was endeavoring by all possible means to enlist the active sympathy and support of the United States and Great Britain in Manchuria, by offering opportunities for railway construction to American and English capitalists and contractors.

The Chinchow-Aigun Railway Scheme.

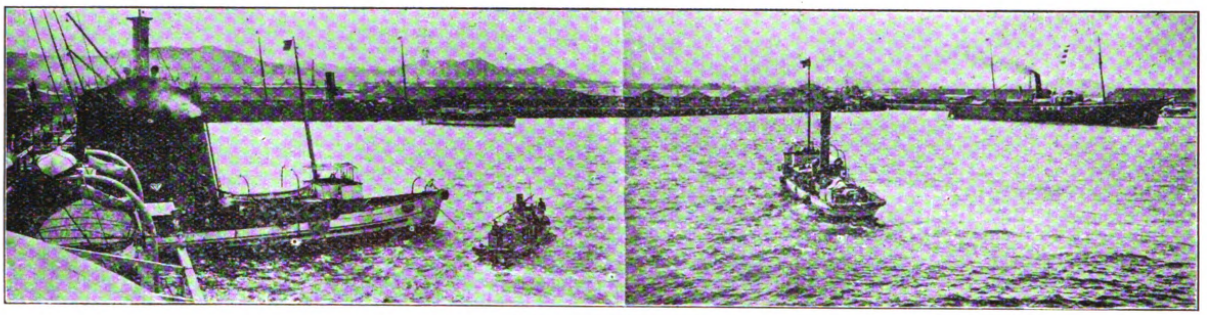
In August, 1907, he arranged with Mr. Willard Straight, then United States Consul-General at Mukden, a project for the creation of a Manchurian Bank, financed by American capital, to be the financial agent of the Manchurian Government, and to undertake the construction (in co-operation with Messrs. Pauling and Co., the British railway contractors) of a line from Hsinmintun to Aigun, and other important enterprises. Owing to the financial panic prevailing in the United States the project was delayed, but in the summer of 1908 Mr. Straight took with him to Washington a Memorandum signed by the Governor of Mukden, which was to form the basis of negotiations for a loan of £20,000,000 for the establishment of the Manchurian Bank. In the meanwhile, subject to financial arrangements, the Manchurian Government had concluded an agreement with Lord French, representing Messrs. Pauling and Co., for the construction of a railway running southwards from Tsitsihar to connect with the Imperial Railways of North China. The Manchurian Bank was to undertake, with American capital, the extension of this line from Tsitsihar to Aigun. For the satisfactory completion of projects of such magnitude it was necessary that a competent and responsible representative of China should discuss the details in person in Washington and New York. Tang Shao-yi was therefore appointed on a special mission to America and left Peking on September 24, and arrived in Washington on November 30. At the beginning of November Mr. Harriman's bankers, Messrs. Kuhn, Loeb and Co., had signified to the State Department their readiness to undertake to finance the Manchurian Bank, if satisfactory terms could be arranged.

On the day that Tang Shao-yi arrived in Washington the American Government exchanged Notes with the Japanese Ambassador at Washington recording the desire of both Governments "to encourage the free and peaceful development of their commerce on the Pacific Ocean," their firm determination "to support, by all pacific means at their disposal, the independence and integrity of China and the principle of equal opportunity," and their intention to "maintain the status quo in the region above mentioned." The death of the Emperor of China, Kuang Hsu, on November 14, followed the next day by the death of the Empress Dowager, doomed the mission of Tang Shao-yi and he was recalled to China on January 8. In December he was consulted by American capitalists regarding the proposals in connection with the Chinese Eastern Railway, which the Russian Government was willing to sell if Japan would agree to sell the South Manchuria Railway, Tang Shao-yi said that China would welcome the scheme. He hoped that an international syndicate might be organised to purchase both railways on behalf of the Chinese Government, thus anticipating the provision for their repurchase contained in the Russo-Chinese Railway agreement of 1896. This was the germ of Mr. Knox's "neutralisation scheme." Before the idea could develop, Mr. Harriman died and the plans died with him.

Mr. Knox's Neutralisation Scheme.

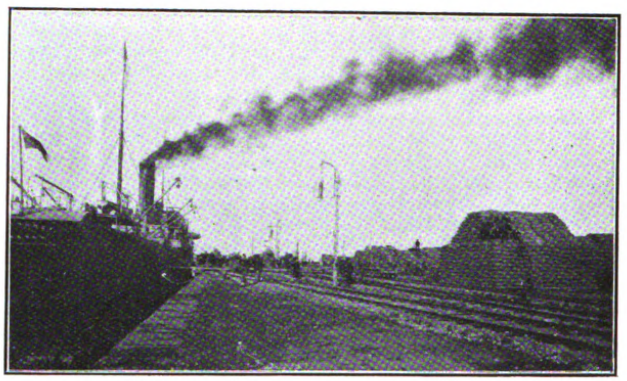
On October 2 the Chinese Government, strongly urged by American financiers, signed a preliminary agreement for the construction of the Chinchou-Aigun railway, and things were at this stage when Mr. Secretary Knox in November broached to the British Government his scheme for the neutralisation of the Manchurian railways. The moment chosen and the manner of its presentment, were equally unfortunate. The British Government expressed its guarded acquiescence in the principles advocated provided that the Powers concerned were favorably disposed. Mr. Knox, however, assumed that the British attitude was equivalent to moral support and proceeded to submit his scheme simultaneously to the British, French, German, Russian, Japanese and Chinese Governments. Diplomatically speaking, his procedure in this matter was a serious blunder, in that he failed, in the first instance, to consult the Powers chiefly concerned, Russia and Japan.

The purport of Mr. Knox's scheme amounted to a proposal that the Powers addressed should authorise the organisation of an international syndicate to buy out the Russian and Japanese railway interests in Manchuria, and it was suggested that if the Powers were unwilling to join in the general neutralisation scheme they should at least unite in the financing and construction of the Chinchou-Aigun railway. The presentation of this second proposition overlooked the vital fact, Mr. Bland points out, that by the Portsmouth Treaty China was strictly entitled to use her own discretion in the development of her commerce

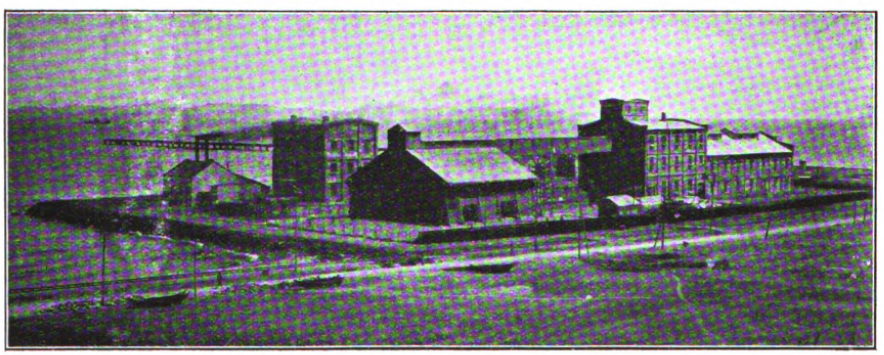


Panoramic View of Wharves at Dairen.

Sacked Beans Awaiting Shipment at Dairen.

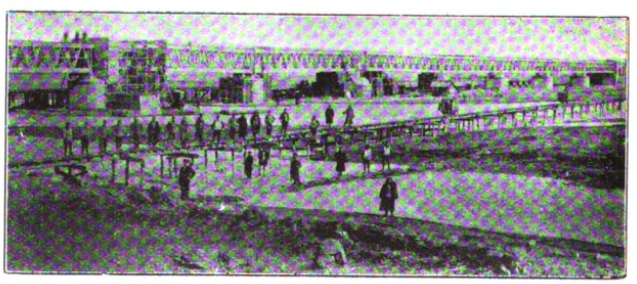


Railway Employees' Quarters at Dairen.



South Manchurian Railway's Experimental Bean Mill.

Stacks of Kiaoliang.



Bridge near Dairen.

and industry in Manchuria. It was imperative in China's interests that the two questions should be treated separately. Mr. Rockhill, then American Ambassador at St. Petersburg, realised this fundamental fact and presented to the Russian Government only the neutralisation scheme. The Russian Government, learning of the second proposition through its Ambassadors, naturally jumped to the conclusion that the American Government was playing a double game—of which Mr. Knox was constitutionally incapable. Their suspicions thus aroused, the neutralisation scheme was doomed and the Russo-Japanese entente to divide Manchuria and Mongolia began from this moment to assume definite form and substance. The American Government's policy was, Mr. Bland emphasizes, irreproachable and just; but it erred in assuming, as usual, a restraining virtue in Treaties and Conventions. Everything depended upon separating Russia from Japan; everything was done to irritate Russian sensitiveness and to lay the foundations of the predatory pact which has since dominated the Far Eastern situation. The immediate result of the scheme was the Russo-Japanese agreement of July 4, 1910.

The Withdrawal of America.

There remained nothing for the Americans to do but to proceed independently in the matter of the Chinchou-Aigun railway, the final detailed agreement for which was completed in April, 1910, and protested against by Japan and Russia. It was denounced as a deep laid plan for attacking Russian territories in Eastern Siberia and Russia's special interests in Mongolia and Manchuria. The pledge given in the Portsmouth Treaty by Russia and Japan alike, not to exploit their existing railways for strategic purposes was deliberately repudiated and an intimation was plainly conveyed to the Waiwupu that the joint protests against the Chinchou-Aigun scheme were based on considerations of political and strategical expediency. The Viceroy of Manchuria endeavored repeatedly to obtain assurances that the American Government would afford material assistance, if necessary, in the matter of the railway, given which the Chinese Government was prepared to proceed with its construction. But the United States were evidently not in a position to support China, single handed, to the logical conclusions of such an engagement. Mr. Knox's scheme had come up against the stone wall of hard facts. Benevolent theories, in Peking as in Panama, are powerless against the forces of geographical gravitation.

Mr. Bland exhaustively deals with other Manchurian Development schemes and the effect of the Russo-Japanese entente, which readers who are interested would do well to peruse. Exigencies of space compel us to leave the matter with one or two of the author's conclusions.

Mr. Bland sums up that the appearance of the United States as a world Power on the crowded stage of the Far East has been characterised by vigorous initiative and sound political instincts, hampered by lack of *savoir-faire* and an almost crude naivety of diplomatic procedure at the State Department. To America, nevertheless, must be given credit for appreciating the essential facts of the situation and the courage to face them. Taking a broad view of the future of world politics in the Far East, it would seem that America may yet have cause to recognise that the movement of Japanese expansion in Manchuria and Mongolia is preferable to its activities in Chili, Peru, and Brazil. From the American point of view the potential trade of China is undoubtedly worth defending by every possible device of diplomacy; but the crux of the situation lies in the fact that Russia and Japan are both well aware that it is not worth the sacrifices of a war. If China's "rights recovery" programme is, as we believe, a vain dream, then treaties and conventions notwithstanding, Japan will extend her Empire westwards on the Asiatic continent at China's expense. As it was with Korea so it must be with any desirable territories to the north and west of the Great Wall, which China cannot defend by force of arms.

And finally Mr. Bland ventures on a prophecy which China at this moment is curiously watching to see if it will be fulfilled.

The facts just quoted once recognised, he writes, and the advantages admitted of diverting Japanese expansion westwards, all the assurances and shibboleths now current in regard to the maintenance of China's integrity will be decently and quietly folded away, as they were in Korea—exchanged for practical bargainings as to the maintenance of existing tariffs, and a door left temporarily open to international trade. For, with America as with Japan and every other Power of the modern world, the gospel of necessity is greater, in the end, than any international obligations

New Japanese and Russian Projects.

The departure of America from the Manchuria field was evidently regarded as complete by Japan despite the fact that those concerned had notified China that they adhered to their right in the agreement for the construction of the Chinchou-Aigun railway. The adherence was, it would appear, merely academic, for in 1913 Japan began to test just what American feeling would amount to in regard to that projected line. The test was the opening of negotiations with China for the construction of railways in Eastern Inner Mongolia. Newspapers both in China and Japan published information of Japan's desires, but nothing in the shape of a protest emanated from America when it became known that the railways which Japan purposed constructing practically followed the route, or a great part of it, which would have been covered by the Chinchou-Aigun railway.

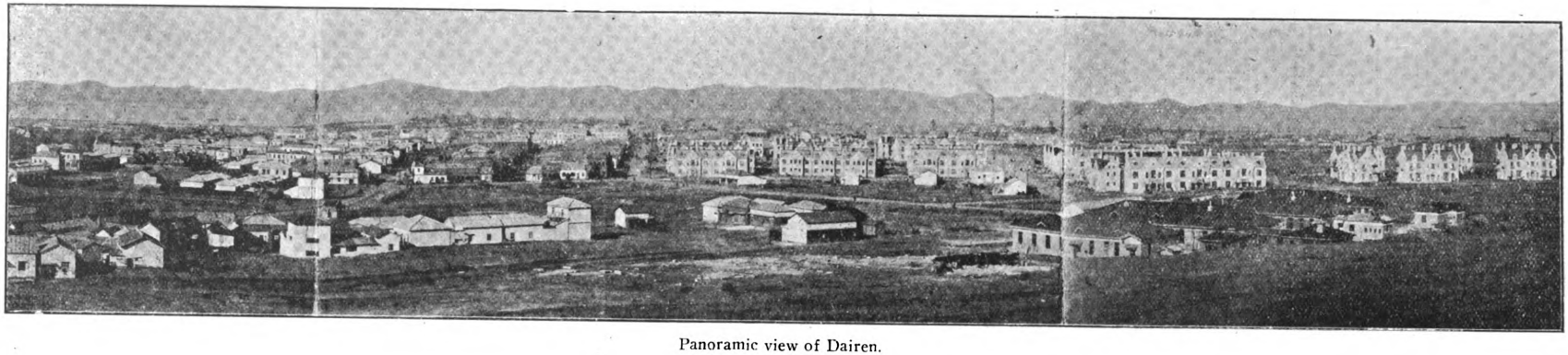
Japan, in short, negotiated for, and came to an understanding about, a railway virtually from Jehol to Taonanfu, and from that city to the South Manchuria Railway either at Shihpingkai or Changchun. At the same time, too, for a line to connect Kaiyuan with Hailungcheng. A railway from Taonanfu to Jehol would, of course, cover the southern section of any line from Chinchou to Tsitsihar and Aigun, but this notwithstanding, neither the British, who were interested owing to Messrs. Pauling and Co's connection with it, nor the Americans, raised a murmur of dissent, an attitude which could indicate nothing but that they were ready to recognise the inevitable fact that Japan could not be restrained. Messrs. Pauling and Co., were, however, now interested in another railway south of the Yangtsze, that from Shasi to Shingyifu, and were content to relinquish any claims to the Chinchou-Aigun agreement.

America's quiescent attitude was, however, significant, and was unexpected by Japan and Russia. Both felt that a revival of the old Chinchow-Aigun controversy was certain, and when it did not develop they regarded it as obvious that the State Department had lost interest in the Manchurian question entirely. And Russia did not realise the fact with regret. Her representatives promptly renewed negotiations with the Chinese Government for an extension of the Russian railway system in North Manchuria, and ultimately came to an understanding with the Government for the right to construct a railway from Blagoveshchensk on the north bank of the Amur River to Aigun on the south bank, thence to Mergen (about half way to Tsitsihar), thence to Harbin. What is talked of as "a branch line" will also connect Mergen with Tsitsihar and the Siberian railway. This scheme will cover the northern section of the proposed Chinchou-Aigun railway, and the only gap unprovided for by the schemes of Japan and Russia is that small section between Taonanfu and Tsitsihar, a matter of easy and natural adjustment when the time arrives.

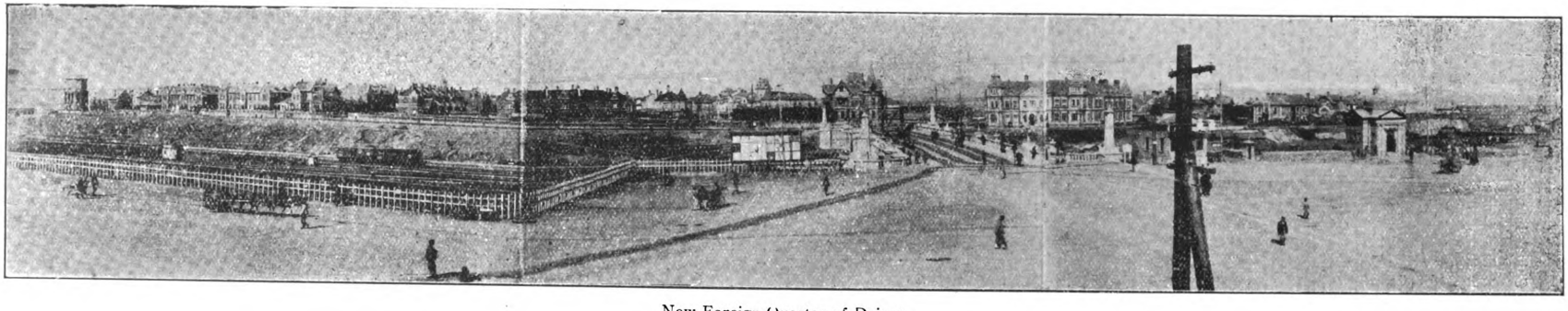
These projects completely put the Chinchou-Aigun proposal out of court, and as America has objected to neither it must be taken for granted that she is content to permit her claims to go by default. The Russian scheme will give Russia complete railway dominance in the north of Manchuria, an understanding arranged with Japan prior to the European war, and the Japanese gains in Manchuria as a result of the negotiations now proceeding, combined with the projects in Eastern Inner Mongolia, render her position secure there, at least for the time being. Putting politics aside the result will be an adequate development of a vast and rich region, the only regrettable feature being that China has been unable to take advantage of the well-meant efforts that have from time to time been made to help her retain dominance for her own national advantage.

The South Manchuria Railway Co.

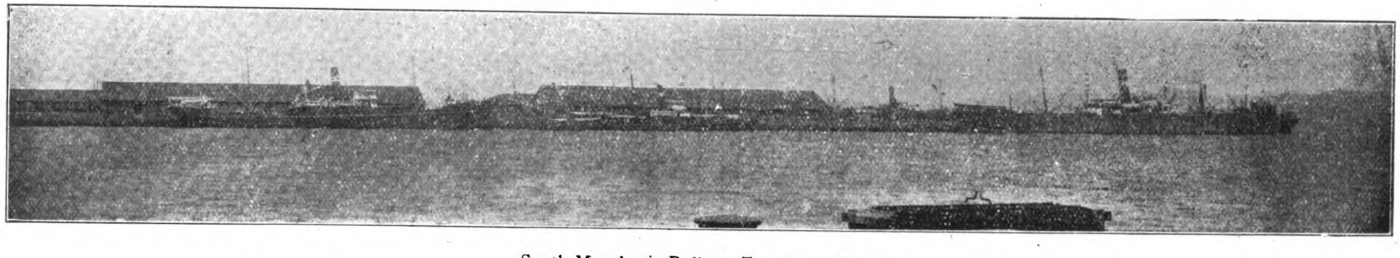
The terms of the Peking Protocol, previously mentioned, which refer to the South Manchuria Railway have been kept secret, but acting upon them the Japanese Government took steps to form the South Manchuria Railway Company to operate the railway, mines and other industries. On June 7, 1906, therefore, an Imperial Ordinance was issued concerning the establishment of the Company, and on July 13 of the same year General Viscount G. Kodama was appointed President of the Organization Committee which was composed of 81 members. Viscount Kodama died before he was able to take up the work and Viscount Terauchi, Minister of War, assumed the presidency on July 25. On August 1 the Government forwarded the Committee the conditions pertaining to the establishment of the Company and on August 18 the Government approved the Articles of Association. The subscription for shares took place from September 10 to October 15, and the establishment of the Company was finally sanctioned by the Minister of Communications on November 1. The Board of Directors is composed of one President, one Vice-President, and at least four Directors, in addition to whom the Company has from 3 to 5 Auditors. Both the President and the Vice-President are appointed by the



Panoramic view of Dairen.



New Foreign Quarter of Dairen.



South Manchuria Railway Terminus, Dairen.

Government with Imperial Sanction; the Directors are also appointed by the Government from among shareholders owning at least 50 shares, while the Auditors are elected at the general meeting of shareholders. Baron S. Goto was appointed the first President of the Company. The head office and headquarters of the Company were established at Dalny, and a branch office was opened in Tokyo.

The authorised capital of the Company is two hundred million yen, which is divided into one million shares of 200 yen (about £20) each. The Japanese Government owns half of the total authorized capital, viz., one hundred million yen, which is its share for handing over to the Company the complete railway lines in Manchuria with the properties attaching thereto (except the rolling stock and the rails and accessory materials on the Antung-Mukden railway) and the coal mines of Fushun and Yentai—altogether of an assessed total value of one hundred million yen. The other half, namely, one hundred million yen, may be subscribed for and taken up by the Chinese Government and Japanese and Chinese subjects only; and the shareholders are guaranteed a dividend of 6 per cent. per annum by the Japanese Government. Owing to the economic conditions in Japan at the time of the establishment of the Company the first issue of shares was limited to the amount of twenty million yen, of which only one-tenth was called up. But, as the enterprises of the Company advanced, necessity arose to raise funds by other means than debentures, and the Company made another call in 1912 of sixty yen per share, amounting to six million yen. The shares not yet issued amount to eighty million yen, while the share capital subscribed but not yet paid up is twelve million yen.

On April 1, 1907, the Company began its business, having on the same day taken possession of the following properties, which constitute the investment of the Company:—

1.—The railway lines between Dairen (Dalny) and Changchun; Tafangshen and Liushutun (now in operation); Nankuanling and Port Arthur; Tashihchiao and Yingkou; Yentai on the main line and the Yentai coal mine; Suchiatun and Fushun coal mine; and Antung and Mukden.

2.—The machinery, implements, and other materials actually in use on the above railways and mines, and also on the railway line between Mukden and Hsinmintun.

3.—The properties in land, buildings, and other establishments both within and without the Kwantung Leased Territory, belonging to the above railways and mines.

The Mukden-Hsinmintun Railway, and all appurtenances, was ceded to the Chinese Government by an agreement entered into on April 15, 1907, its actual transfer taking place on June 1, of the same year; and in fulfilment of an agreement entered into in June, 1907, with the Russian Government at St. Petersburg, the railway lines and properties to the south of Kwanchengtzu station, together with the coal mines of Shihpeiling and Taochiatun and their appurtenances, were formally transferred to the South Manchuria Railway Company between July 15 and July 18, 1907.

With the object of raising, largely through debentures, the funds required for the construction of these railways, as well as for the subsidiary undertakings, the Company at various times floated in London by three separate issues of debentures a total amount of £8,000,000 sterling at the uniform rate of interest of 5 per cent., both capital and interest being guaranteed by the Japanese Government. The following debentures were thus issued:—

1st issue: £4,000,000 sterling issued on July 19, 1907, redeemable within 25 years.

2nd issue: £2,000,000 sterling, issued on June 1, 1908, redeemable within 3 years.

3rd issue: £2,000,000 sterling, issued on December 16, 1908, redeemable on July 23, 1932.

Partly to meet the increasing demand for expenditure consequent upon the progress of the Company's enterprises, and partly to repay the notes for £2,000,000 falling due on June 1, 1911, it became necessary to float debentures a fourth time in London. Therefore subscription for £6,000,000 sterling 4½ per cent. bonds (subscription price 98 per cent., repayable on January 1, 1936, the repayment of principal and interest being unconditionally guaranteed by the Imperial Japanese Government as before) was opened on January 3, 1911, and closed on January 5.

The present debentures of the Company are:—
£6,000,000 5 per cent. sterling bonds.
£6,000,000 4½ per cent. sterling bonds.
Total £12,000,000 = Gold Yen 117,156,000.

The railways acquired from the Government of April 1, 1907, were as follow:—

The main line between Dairen and Changchun	437½	miles.
The Port Arthur branch line	28.8	,,
The Liushutun branch line	3.6	,,
The Yingkou branch line	13.4	,,
The Yentai branch line	9.7	,,
The Fushun branch line	38.9	,,
The Mukden-Antung line (189 miles by light railway) now, by standard gauge	170.7	,,

The gauge of the whole of the above railways when acquired by the Company from the Government was 3ft. 6in., with the exception of that of the Antung-Mukden line, which was only 2ft. 6in. This, however, does not include the line from Mukden to Hsinmintun, which, though originally included in the system acquired by the Company, was ceded to China, as already mentioned.

Immediately after the acquisition of these railways the Company commenced, and, without the slightest interruption of traffic, executed their reconstruction to the standard gauge of 4ft. 8½in.—except the Antung-Mukden line—and also the doubling of the track between Dairen and Suchiatun, a distance of 238½ miles. So expeditiously was this performed that as early as November, 1907, traffic on the standard gauge was opened on the Port Arthur line, and on June 1, 1908, the entire main line, as well as the Fushun and Yingkou branch lines, had been rebuilt and completed. In spite of adverse circumstance of every kind consequent upon the war with Russia the engineers of the Company succeeded in widening the gauge on more than 500 miles of railway line, at the same time erecting more than 200 locomotives and 2,500 cars newly received from abroad, thus making it possible for the Company to effect the change to standard gauge practically without interruption of traffic for a single day and without the slightest obstruction.

The Yinkou branch line, which formerly had its terminus at Niuchiatun, was also extended as far as the centre of the Japanese town of Yingkou, where a new station was built and opened for passenger traffic in November, 1909, the old station being utilised as a goods office.

The reconstruction of the Yentai branch line, which became necessary in consequence of the increased output of the Yentai coal mine, was also completed on January 7, 1910, and on March 11, 1910, goods trains commenced to run between Liaoyang and the Yentai coal mine.

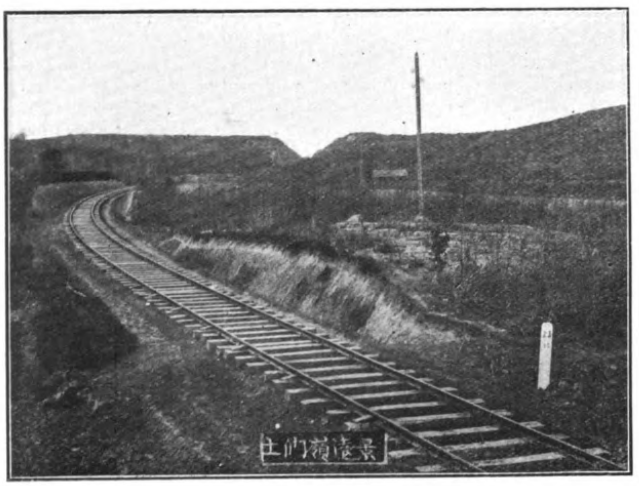
Originally a central railway workshop was erected in Dairen for the construction of rolling stock, repairs, and other works, not only to meet the requirements of the Company but those from outside. Besides the central workshop, small workshops for the repair of rolling stock, machinery, and implements were established in Liaoyang, Kungchuling, and Antung. However, as these workshops soon proved to be altogether too small and insufficiently equipped to cope with the ever-increasing demands it was decided to erect new and in every respect modernly equipped workshops on an extensive scale at Shaokou, near Dairen; and this scheme was commenced towards the end of 1908 and completed on August 9, 1911, together with house accommodation for 1,800 workmen and their families.

In addition to the railways, which undoubtedly are the best equipped in this part of the world, the Company conducts other enterprises including shipping, harbour affairs, coal mines, electrical works, gas works, hotels, and experimental laboratories. All are controlled with the degree of thoroughness which now is familiarly associated with Japanese concerns, and in every respect Japan can be honestly congratulated upon the remarkable efficiency that has been attained in the enterprises which she has taken over or developed in Manchuria.

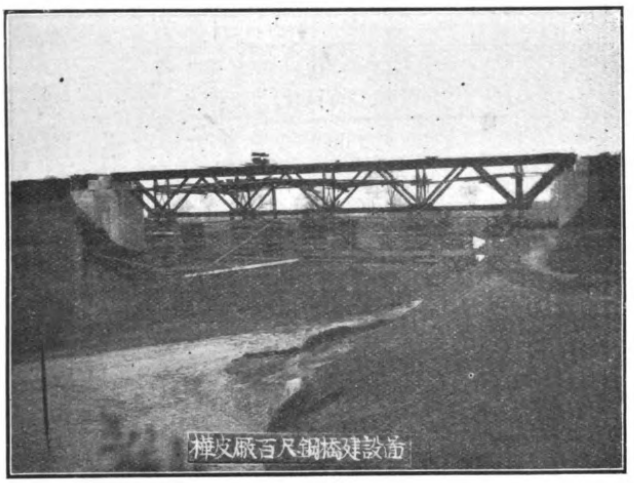
From time to time the FAR EASTERN REVIEW has published illustrated descriptions of the various enterprises of the Company,

View of Kirin, Showing Sungari River.

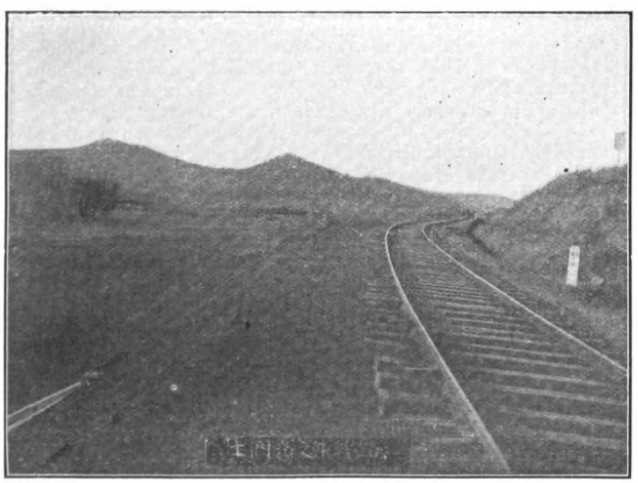
Seventy Foot Cut at Santoliu.



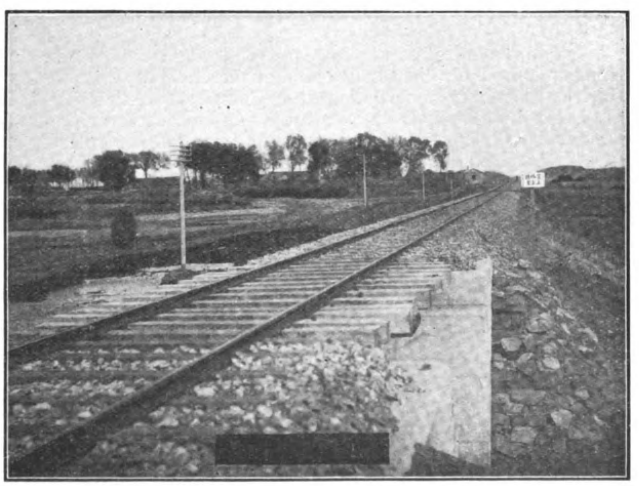
Tumenling Pass on Kirin-Changchun Railway.



Bridge at Huapichuan on Kirin-Changchun Railway.



Eastern Side of Tumenling Pass.



Long Tangent on Kirin-Changchun Railway near Kalun.

and it is only intended here briefly to record the progress achieved since the taking over of the enterprises from the Russians.

A Convention relating to the Japanese and Russian Railway connection in Manchuria was signed at St. Petersburg on June 13, 1907, to conform with the provisions of Article VIII of the Portsmouth Treaty. The Convention arranged for the junction at the Kuanchengtze station and for the establishment of direct communication for passengers and for merchandise, and also all the necessary installations in order to effect in the shortest time and with the least expense possible, the transport of the merchandise at the terminal stations, made necessary by the difference in the width of the gauges.

A Protocol to the Convention was made to settle "certain questions relative to the terminus of Kuanchengtse and to the coal mines of Shibelin and Taokiatun." Article 1 states:

> It has been agreed between the two high contracting parties that in principle the terminus of Kuanchengtse and its appendages are the common property of Japan and Russia, but that for the sake of practical convenience, the exclusive ownership of the said terminus and of its appendages shall remain with Russia, and that for it the Russian Government shall pay to the Japanese Government a sum of 560,393 roubles in virtue of compensation for the renunciation by Japan of her rights of co-ownership of the Kuanchengtse terminus and its appendages.

Article 2 dealt, inter alia, with the transfer of the coal mines at Shibelin and Taokiatun with all their appendages.

A further convention was signed at St. Petersburg on July 4, 1910, to develop the effects of the former one. The high contracting parties mutually agreed to lend to each other their friendly co-operation "with a view to the amelioration of their respective railway lines in Manchuria and the improvement of the connecting service of the said railways and to abstain from all competition prejudicial to the realization of this object." In Article II of the Convention they engage "to maintain and respect the status quo in Manchuria resulting from the treaties, conventions and other arrangements concluded up to this day between Japan and Russia or between either of those two Powers and China."

In addition to this convention special traffic agreements have been made between the two Companies and as a result efficient passenger services have been conducted to and from the Far East and Europe, the only inconvenience being the necessity for passengers to change trains, owing to the difference in gauge, at Kuanchengtse. The service has materially reduced the time of a journey either to or from Europe, and passengers always speak in the highest terms of the facilities provided for the long railway journey.

The South Manchuria Railway in particular caters in the best manner possible for passengers, and has earned the reputation of conducting a service second to none in the world. Whatever the politics that may be involved in this railway matter the fact remains that the world has gained by it, and the extension of the lease to 99 years as agreed to by the Chinese at the conferences now sitting added but nineteen years to the term that was to run.

The Antung-Mukden Railway.

By acquiring an extension of the agreement of the Antung-Mukden Railway, which expires in 1923, to 99 years, Japan is able to bring this hitherto much disputed concern into line with the South Manchuria Railway so far as the term of possession is concerned. It was hurriedly constructed by Japan purely as a military railway during the war with Russia, and covered a distance of some 189 miles, the gauge being a narrow one of 2½ feet. After the war China pressed for the removal of the line, but Japan had other ideas and countered the Chinese proposals by demanding the right to reconstruct the railway for commercial purposes. In the agreement signed at Peking on December 22, 1905, as a corollary to the Portsmouth Treaty, Article VI dealt with this railway as follows:—

> "The Imperial Chinese Government agrees that Japan has the right to maintain and work the military railway line constructed between Antung and Moukden and to improve the said line so as to make it fit for the conveyance of commercial and industrial goods of all nations. The term for which such right is conceded is fifteen years from the date of the completion of the improvements above provided for. The work of such improvement is to be completed within two years, exclusive of a period of twelve months during which it will have to be delayed owing to the necessity of using the existing line for the withdrawal of troops. The term of the concession above mentioned is therefore to expire in the 49th year of Kuang Hsu. At the expiration of that term, the said railway shall be sold to China at a price to be determined by appraisement of all its properties by a foreign expert who will be selected by both parties. The conveyance by the railway of the troops and munitions of war of the Chinese Government prior to such sale shall be dealt with in accordance with the regulations of the Chinese Eastern Railway. Regarding the manner in which the improvements of the railway are to be effected, it is agreed that the persons undertaking the work on behalf of Japan shall consult with the Commissioner despatched for the purpose by China. The Chinese Government will also appoint a Commissioner to look after the business relating to the railway as is provided in the Agreement relating to the Chinese Eastern Railway. It is further agreed that detailed regulations shall be concluded regarding the tariffs for the carriage by the railway of the public and private goods of China."

Against the fulfilment of this agreement China interposed obstructions regarding reconstruction and policing, and on June 24, 1909, sent a note to Japan disagreeing to the widening of the gauge, and raising other points. Japan then decided to adopt a strong attitude and on August 6 notified the Chinese that she intended to reconstruct the line, despite what the Peking Government might say or do. On August 13 the Chinese Government replied and from that reply the Japanese Government were justified in assuming that China was fully prepared to recognize the immediate necessity of reconstructing the line and that she desired to render all necessary co-operation in carrying out the undertaking. The Japanese Government thereupon instructed Consul-General Koike, at Mukden, to sign a Memorandum with Viceroy Hsi Liang and Governor Cheng to the following effect:—

> 1.—The same gauge as that of the Peking-Mukden Railway shall be adopted.
>
> 2.—Both Japan and China shall recognize and approve, on the whole, the line as already surveyed and agreed to by the Commissioners of the two Governments, but the location of that portion of the line from Chen-hsiang-tun to Mukden shall remain to be decided by mutual conference between the two countries.
>
> 3.—On and from the date when the Memorandum is signed, negotiations for the purchase of land and for the adjustment of all other details shall be instituted.
>
> 4.—From the day following the signing of the Memorandum, that is from the day after the negotiations above mentioned are instituted, the work of reconstruction shall be accelerated.
>
> 5.—China shall instruct the local officials along the line to give every facility regarding the execution of the work.

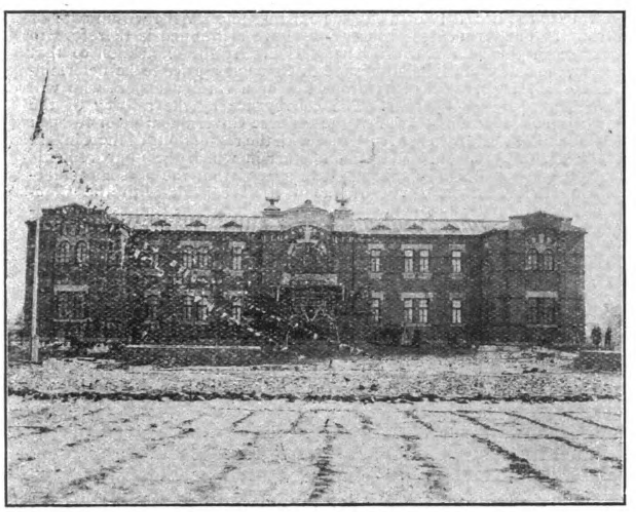
It is significant that not one official protest was raised by any Power against Japan's move, and it disclosed the fact that China had alienated her best friends and stood alone.

The reconstruction of the line was recommenced in August, 1909, and proceeded so rapidly that the Mukden-Shihchiaotsu section (35 miles) was opened for traffic on November 3 of the same year; the Antung-Chikuanshan section on November 3, 1910; the Shihchiaotsu-Penhshiu section on January 15, 1911, and the remaining section from Penhshiu to Chikuanshan (73 miles), notwithstanding considerable engineering difficulties that had been almost constantly met with, so remarkable a progress was made that the whole work was completed on November 1, 1911, on which day was celebrated the completion of the conversion of the whole line. At the same time the Company made an arrangement with the Chosen (Korean) Railway for through express passenger service.

On November 2, 1911, an agreement was made to settle points connected with the effecting of direct traffic connections between the Antung-Mukden and the Korean railways. In this agreement it was stipulated for railway purposes that the centre of the bridge over the Yalu River should be regarded as the boundary line between Korean and Chinese territory.

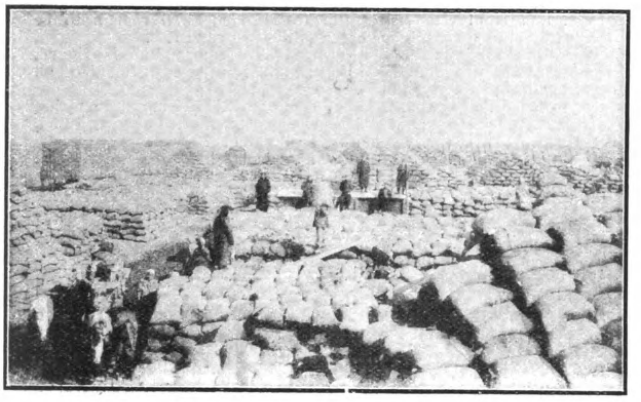
Hsinmintun-Mukden and Kirin-Changchun Railways

China being desirous of acquiring the railway constructed by Japan between Hsinmintun and Mukden, to link up with the Peking-Mukden system, and Japan being desirous of extending her railway influence eastwards from Changchun to Kirin and beyond, an agreement was come to between the two parties with regard to the former two on April 15, 1907, and a further one regarding the Kirin-Changchun line on August 12, 1909. The Chientao Convention, signed later, also refers to the extension of the Kirin-Changchun Railway eastwards to Korea.



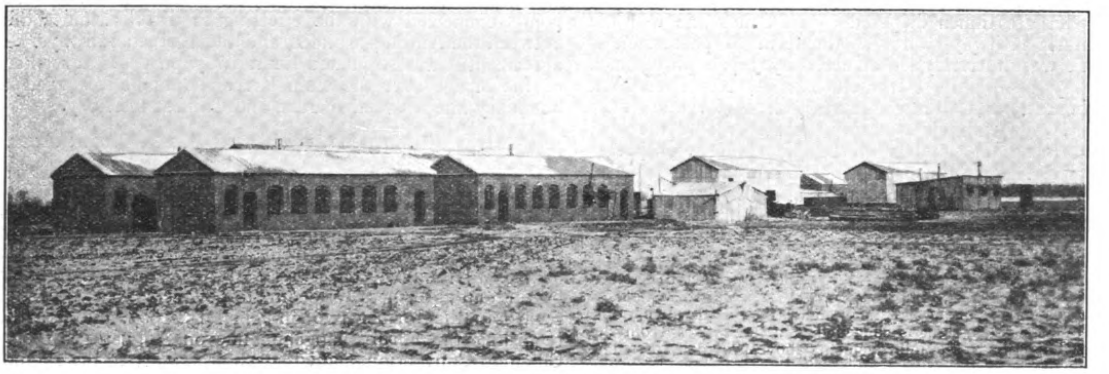
Kirin-Changchun Railway Offices.

First Class Station on Kirin-Changchun Line.



Beans Awaiting Transportation.

Sacking Beans at Changchun.



Storehouse at Changchun.

Acting on the agreements concluded with regard to the Kirin-Changchun railway, work was commenced in February, 1910, and traffic was opened in October, 1912. The Capital was Tls. 3,600,000. The line is 80 miles in length, and the gauge is the standard one.

The agreement signed on April 16, 1907, is as follows:—

Consuke Hayashi, Envoy Extraordinary and Minister Plenipotentiary of Japan, and Na T'ung, Ch'u Hungchi and Tang Shao-i, Ministers of the Imperial Chinese Board of Foreign Affairs, having been appointed thereto by their respective Governments, have agreed upon the following articles:

1.—The Chinese Government being desirous of purchasing the Hsinmintun-Mukden Railway, constructed by Japan, hereby agrees that the purchase price thereof shall be Japanese gold yen 1,660,000, to be paid through the Yokohama Specie Bank at Tientsin.

The status of this railway shall be changed by the Chinese Government to that of the lines built by China herself, and it is agreed that one-half of the capital needed for that part of the line east of the Liao River shall be borrowed from the Southern Manchurian Railway Company.

2.—The Chinese Government, being about to construct a railway line herself from Kirin to Kwangchengtze, agrees to borrow from the aforesaid Company one-half of the capital needed for this work.

3.—The conditions of the loans provided for in Articles 1 and 2, with the exception of the periods within which they are to be repayable, shall be in all respects similar to those of the Loan Contract of the railways inside and outside Shan-hai-kuan. The most important conditions are mentioned below. The regulations for the management of the railway line shall correspond with the methods at present employed by the General Office of the railway lines inside and outside Shan-hai-kuan.

(*a*) The periods within which the loans shall be repaid shall be for that part of the Hsinminting-Mukden line east of the Liao River, eighteen years, and for the Kirin-Kwangchengtze line twenty-five years.

No repayment in full of these loans shall be allowed before the expiration of the periods named.

(*b*) The security for the loan from the Southern Manchurian Railway Company for that part of the Hsinmin-Mukden line east of the Liao River shall be the real property of the aforesaid section and its earnings.

The security for the mercantile shares to be issued by the Kirin-Kwangchengtze Railway Administration, as well as for the loan to be made from the Southern Manchurian Railway Company, shall be the real property of the said railway and its earnings.

So long as these loans are not repaid by the Chinese Government, the aforesaid property and earnings of the above-named lines shall not be pledged as security for any other loan.

During the periods of these loans the Chinese Government agrees that the buildings, machinery, rolling-stock and road bed of the section of the Hsinmin-Mukden Railway east of the Liao River, and of the Kirin-Kwangchengtze Railway, shall be kept in good condition, and furthermore that such additions will be made to the rolling-stock from time to time as may be required to satisfy the demand of the traffic.

If the Kirin-Kwangchengtze line should hereafter build branch lines or an extension, the construction of such lines shall rest of right with the Chinese Government, but if there should be a lack of capital, application shall be made to the Southern Manchurian Railway Company for an arrangement. Should China, however, appropriate funds herself for the construction of any other railway lines than those mentioned, it shall not concern the Southern Manchurian Railway Company.

(*c*) The loans and the interest thereon are guaranteed by the Chinese Government, and should there be any failure to make payment of interest or re-payment of principal at the proper periods, the Company shall at once notify the Chinese Government, which shall pay over to the Company the amount of the shortage. If the Chinese Government, after such notification by the Company, shall be unable to make good the deficit in the payments of principal or interest, the line in question with its real property shall be handed over to the temporary control of the Company until the shortage is made good, after which it will be returned to the control of the Railway Administration.

If, however, the shortage be for a small amount only, an extension of time shall be granted as an accommodation, but never for more than three months.

(*d*) During the periods of these loans the Engineer in Chief employed shall be a Japanese, and should there be an insufficient supply of Chinese for the various posts in the service of the railways, Japanese may be employed with the Chinese. If at any time it shall become necessary to change the Engineer in Chief, consultation must first be had with the (Southern Manchurian Railway) Company before appointment may be made. There shall also be appointed one Japanese Accountant, who must be thoroughly qualified, and who shall have entire responsibility for the arrangement and oversight of the various accounts of the railways, but in his supervision of receipts and expenditures he must consult and act with the Director-General.

(*e*) The railways mentioned being Chinese Government lines, the latter shall have the right to transport soldiers and subsistence over either line free of charge whenever military affairs or measures of relief shall require.

(*f*) All earnings of the railways in question must be deposited in Japanese banks. As to the terms upon which such deposits shall be made, satisfactory arrangements shall be agreed upon by the parties concerned when the loan contracts are drawn up.

4.—The Chinese Government, immediately after the purchase of the present Hsinmin-Mukden Railway, shall enter into a contract with the Southern Manchurian Railway Company for the loan in connection with that section of the line east of the Liao River, and shall also appoint and direct a Chinese engineer to consult and act with the Japanese engineer in making a survey of the Kirin-Kwangchengtze line to furnish a basis for estimating the amount of the loan needed for the construction of the line, and within six months after the completion (of the survey) shall enter into a contract with the Southern Manchurian Railway Company for the loan.

5.—The lines from Hsinmin to Mukden, and from Kirin to Kwangchengtze, under the management of China, must connect with the Southern Manchurian Railway line. The Tientsin-Shan-hai-kuan Railway Administration and the Southern Manchurian Railway Company shall appoint representatives to consult together and draw up the necessary regulations.

6.—The rate at which the loans specified in Articles 1 and 2 shall be issued, shall be determined fairly in accordance with the terms of the most recent loan negotiated by China with any foreign country.

7.—Within one month after the payment of the purchase price of the Hsinmin-Mukden Railway the Chinese Railway Administration shall appoint officers to take control of the sums.

Japanese Calendar, Meiji XLth Year, fourth Month, 15th Day.

Chinese Calendar, Kuanghsu XXXIIIrd Year, Third Moon, 3rd Day (April 15, 1907).

The following supplementary agreement concerning the Kirin-Changchun Railway was signed at Peking, November 12, 1908; and approved by Imperial Rescript of December 27, 1908, in reply to a Memorial of the Board of Posts and Communications.

According to Article IV of the Hsin-Feng (Hsinmintun-Mukden) and Chi-Chang (Kirin-Changchun) Railway Agreement between the two Governments of Japan and China, dated Ming Chih 40th year, 4th month, 15th day, Kuanghsu 33rd year, 3rd month, 3rd day (April 15, 1907), it was agreed that before settling the loan contract for the said railways, the two governments should draw up a supplementary agreement regarding matters not settled in the original agreement.

Now the two officials designated below have concluded the following agreement:—

Article I—It is agreed by Articles I and II of the Hsin-Feng and Chi-chang Railway Agreement between the Governments of Japan and China (hereafter to be called the "Agreement") that half of the capital needed for that portion of the Chin-Feng (Peking-Mukden) Railway lying east of the Liao River amounting to Yen 320,000, and half of the capital needed for the Chi-Chang Railway amounting to Yen 2,150,000 should be borrowed from the Southern Manchuria Railway Company.

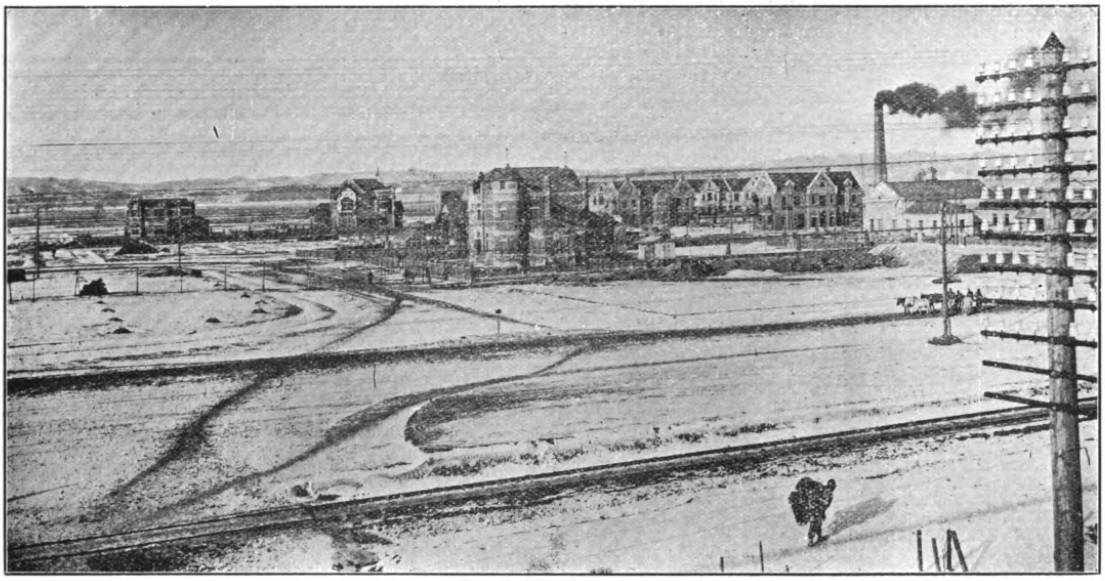
Article II—The interest on this loan shall be at the rate of five per cent (5% per annum).

Article III—The actual rate at which the loan shall be realised shall be 93 for every 100 as agreed upon in Article VI of the Agreement.

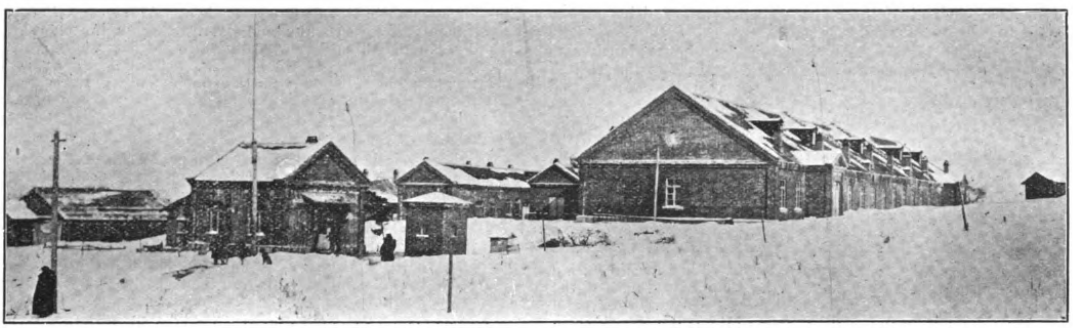
Article IV—It is stipulated in Article III of the Agreement that during the term of the loan, the Chinese Government shall employ a Japanese Engineer-in-Chief for that portion of the Ching-Feng Railway which lies East of the Liao River. For the present the Japanese Engineers now in the employ of the Chin-Feng Railway may continue to act and as at present will continue to be under the control of the Director and Engineer-in-Chief of the Chin-Feng Railway. If in future changes are made in the engineering staff, as provided in the Agreement, application shall be made to the Southern Manchuria Railway which will make appointments after full consultation. The status of these engineers shall be as stated above.

Article V—Since it is difficult for the Chinese Government to keep separate accounts for that portion of the Chin-Feng Railway which lies East of the Liao River, the Japanese Government consents that no Japanese accountants shall be specially appointed and the Japanese Government consents that the Chinese Government shall set aside monthly a sum calculated to be sufficient for the monthly payment of capital and interest on the amount of the loan for the said section of railway. This sum shall be deposited on the first day of every month in some Japanese Bank in China designated by the South Manchuria Railway Company. This deposit shall be regarded as a sinking fund for the redemption of the capital and interest of the loan when due. The manner of making the payments of the capital and interest of the loan when due, and the interest which shall be allowed by the Bank on the sums deposited shall be decided when the detailed loan contract is drawn up. The Chinese Government also consents that the monthly balance sheets for the whole Chin-Feng Railway line and the annual exact statement of accounts in English shall be sent monthly and annually to the South Manchuria Railway Company for inspection.

Article VI—The Engineer-in-Chief and the Accountants of the Chi-Chang Railway should all be Japanese as provided in Article III of the Agreement. The method of appointment shall be as follows: The Chinese Government shall select a well-trained and capable Engineer-in-Chief and appoint him after full consultation with the South Manchuria Railway Company. The Accountants shall be selected by the South Manchuria Railway Company and after consultation with the Chinese



Fushun Colliery, Operated by the South Manchuria Railway.



Barracks for Troops at Fushun.

View of Fushun.

Government the Chinese Government shall appoint them. If in future it shall be necessary to change the Engineer-in-Chief or Accountant, there must be consultation with the South Manchuria Railway Company according to the Agreement and the appointments must be made as arranged above.

Article VII—The Special Loan Contract must conform with the stipulations of the Agreement and of this Supplementary Agreement. It will be drawn up between the South Manchuria Railway Company and an official appointed by the Board of Posts and Communications. This Supplementary Agreement, will be in force when ratified by the two Governments.

Signed at Peking, Ming Chih 41st year, 11th month, 12th day, Kuanghsu 34th year, 10th month, 19th day (November 12, 1908), by

(signed) Moritaro Abe
First Secretary of Legation.
Liang Shih-yi,
Director of the Head Railway Office of the Board of Posts and Communications.

Article VI of the Chientao convention says:—

The Government of China shall undertake to extend the Kirin-Changchun Railway to the southern boundary of Yenchi, and to connect it with Hoiryong with a Korean railway, and such extension shall be effected upon the same terms as the Kirin-Changchun railway. The date of commencing the work of the proposed extension shall be determined by the Government of China, considering the actual requirements of the situation, and upon consultation with the Government of Japan.

It is interesting to note that on July 11/24, 1902, an agreement, which did not become effective, was signed with regard to the "construction and management of the Kirin-Changchun railway by the Chinese Eastern Railway Company, with the express object of encouraging the trade of the city of Kirin."

According to this agreement it was intended to have a Supervising Commission appointed, the General Director of which was to have been the Tartar-General of Kirin, "for the supervision of the construction of this railway in a thorough and honest manner." Article 7 provided that at the expiration of 36 years the Chinese Government should have the right to repurchase the railway, and Article 13 provided that on the day of the approval of the agreement at Peking the Chinese Eastern Railway Company should deliver to the Tartar-General of Kirin 350,000 roubles.

At the Sino-Japanese Conference held at Peking on Tuesday, March 23, China agreed to hand the control and administration of the Kirin-Changchun railway over to Japan.

THE LEASED TERRITORY OF LIAOTUNG

Now that China has definitely agreed to extend the lease of the portion of the Liaotung or Kwangtung Peninsula which was taken over by Japan from Russia after the war of 1904-5, it is interesting to recall the historical associations of Japan with this part of China's dominions. In the war which broke out between China and Japan in July, 1894, principally, so Japan averred, to secure Korea's independence, the Japanese forces obtained success on land and sea. The Chinese fortress at Port Arthur was taken, and the Japanese fought their way as far north as Liaoyang. It speedily became apparent that China was no match for Japan and she therefore made overtures for peace. Japan was in such a favourable position that she was able to impose extremely harsh conditions. She compelled the recognition by China of the independence of Korea, the payment of a war indemnity of Tls. 200,000,000, the opening of four additional ports to trade, extended navigation rights for Japanese vessels in Chinese inland waters, and the cession of the southern portion of Fengtien, the island of Formosa and the Pescadores group of islands. The article of the Treaty of Peace signed at Shimonoseki on April 17, 1895, relating to the cession in territory may be quoted in full:—

China cedes to Japan in perpetuity and full sovereignty the following territories, together with all fortifications, arsenals, and public property thereon:—

(*a*). The southern portion of the Province of Fengtien within the following boundaries:—

The line of demarcation begins at the mouth of the River Yalu, and ascends that stream to the mouth of the River Anping; from thence the line runs to Fenghuang; from thence to Haicheng; from thence to Yingkow, forming a line which describes the southern portion of the territory. The places above named are included in the ceded territory. When the line reaches the River Liao at Yingkow it follows the course of that stream to its mouth, where it terminates. The mid-channel of the River Liao shall be taken as the line of demarcation. This cession also includes all islands appertaining or belonging to the Province of Fengtien situated in the eastern portion of the Bay of Liaotung, and in the northern part of the Yellow Sea.

(*b*). The Island of Formosa, together with all islands appertaining or belonging to the said Island of Formosa.

(*c*). The Pescadores Group, that is to say all islands lying between the 119th and 120th degrees of longitude east of Greenwich and the 23rd and 24th degrees of north latitude.

It will be noted that it was not a lease of this territory in Manchuria that Japan secured, but an unqualified cession. Had there been no intervention by other Powers the southern portion of the Province of Fengtien would be now portion of the Japanese Empire. But Japan had not to deal with China alone. For many years the European Powers had been in a state of anxious indecision in regard to the military capacity of China. In the light of present day knowledge it seems almost ludicrous that so profound was the ignorance in Europe of the internal condition of China that there was a very real dread of provoking her to military action. When Japan had demonstrated that under the rule of the dying Manchu dynasty China had been allowed to sink into a condition of pathetic helplessness and lack of national unity Europe concluded that the Empire was about to fall asunder. Japan, it was decided, should not be allowed to reap the full fruits of her victory. It must be remembered that Japan at that time was far from being a world Power. In fact her steady and methodical assimilation of Western civilization and the development of her military and naval forces on modern lines had attracted but little attention. Her successful emergence from the conflict with China did not inspire most of the Western Powers with an appreciation of the growing strength of Japan so much as a recognition of the weakness of China. Russia in view of her own aspirations for a warm water port, was not willing that southern Manchuria should pass into the possession of a nation that was at least stronger than China. It was represented to Japan that it was considered inimical to the peace of the Far East that any portion of the mainland of China should be ceded to another Power, and Japan, under duress, by a convention signed on November 8, 1895, retroceded the southern portion of the Province of Fengtien, accepting Tls. 30,000,000 as compensation.

As a matter of record it will be as well to quote the remonstrance that was addressed by Russia to Japan on this occasion.

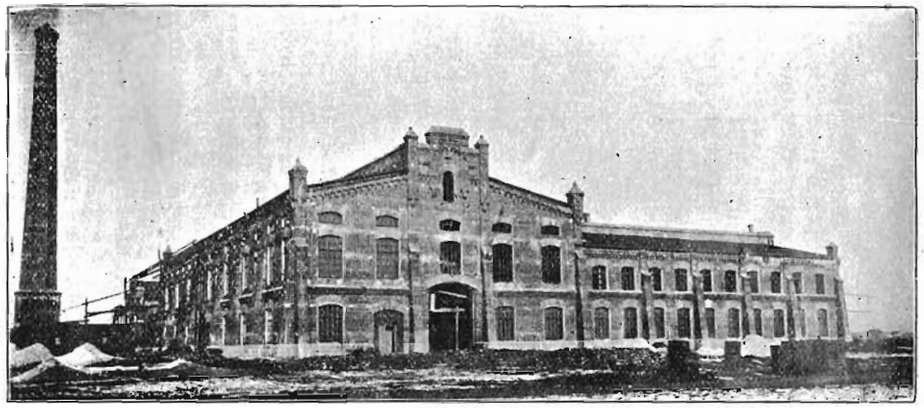
The Government of his Majesty the Emperor of all the Russias, in examining the conditions of peace which Japan has imposed on China, finds that the possession of the peninsula of Liaotung, claimed by Japan, would be a constant menace to the capital of China, would at the same time render illusory the independence of Korea, and would henceforth be a perpetual obstacle to the permanent peace of the Far East. Consequently, the Government of his Majesty the Emperor would give a new proof of their sincere friendship for the Government of his Majesty the Emperor of Japan by advising them to renounce the definitive possession of the peninsula of Liaotung.

When, in 1904, Japan went to war with Russia she repeated her triumphs of ten years earlier, but on an immeasurably greater scale. Port Arthur was again taken and the Russian armies were forced north of Tiehling. By the Treaty of Portsmouth Japan became possessed of Russia's rights in Southern Manchuria. Article V. of the Treaty is as follows:—

The Imperial Russian Government transfer and assign to the Imperial Government of Japan, with the consent of the Government of China, the lease of Port Arthur, Talien, and adjacent territory and territorial waters, and all rights, and privileges, and conces-

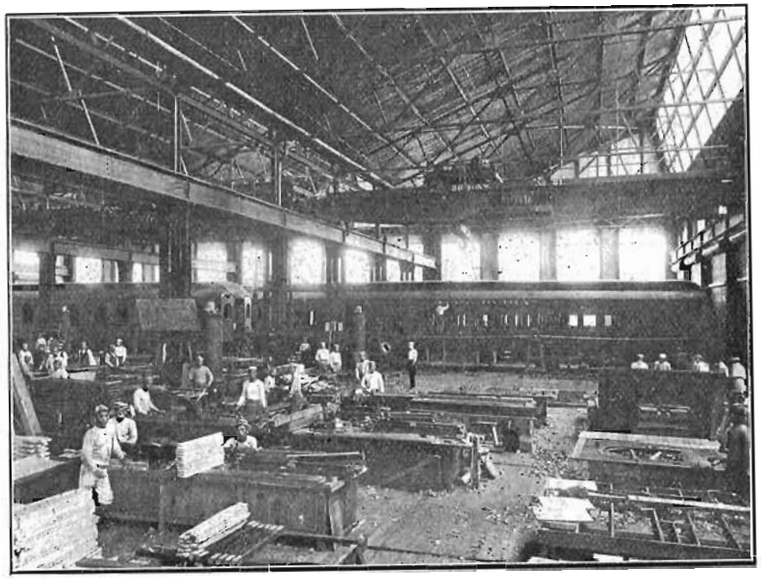
Administration Building at Harbin.

Street Scenes in Harbin.

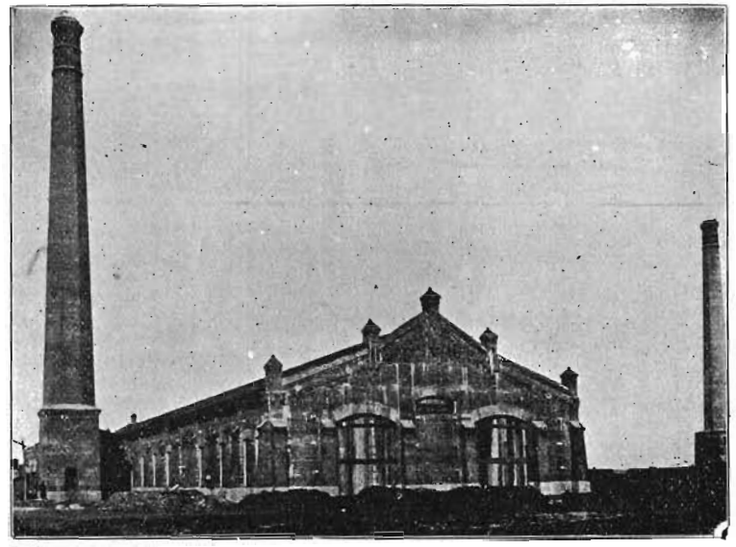


Chinese Eastern Railway Shops at Harbin.

Harbin's Main Street.



Passenger Carshops at Harbin.



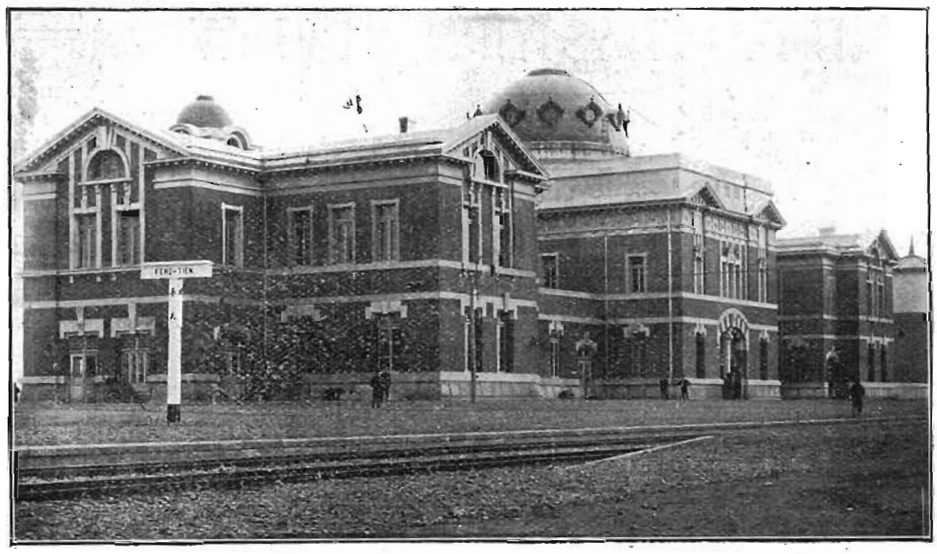
Machine Shops of Chinese Eastern Railway at Harbin.

Article IV. The Russian Government assents to the request of the Chinese Government that the Administration and police of the City of Kinchow shall be Chinese. Chinese troops shall be withdrawn from Kinchow and replaced by Russian troops. The inhabitants of the city have the power to use the roads from Kinchow to the north boundary of the leased territory, and the waters usually required near the city but they have no power to use the sea-coast round about.

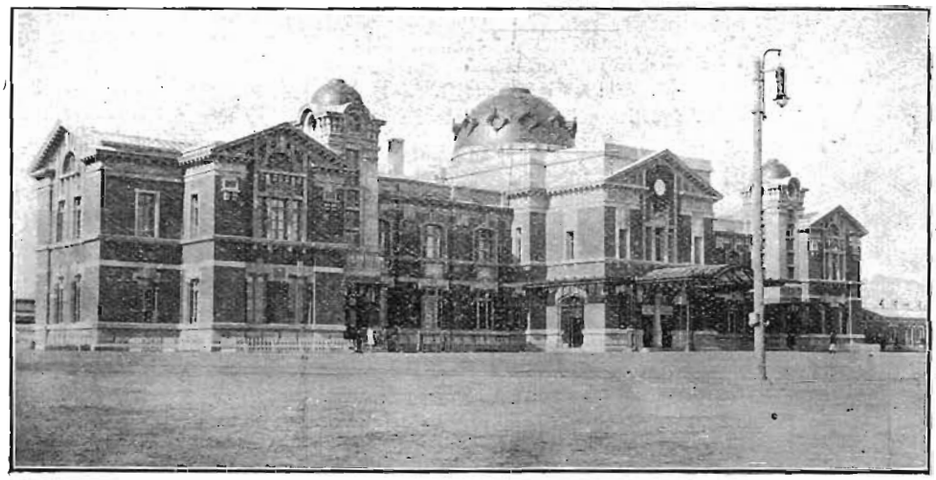
Article V. The Chinese Government agrees (lit. agrees to recognize) 1. That without Russia's consent no concession will be made in the neutral ground for the use of subjects of other Powers. 2. That the ports on the sea-coast east and west of neutral ground shall be not opened to the trade of other Powers. 3. And that without Russia's consent no road and mining concessions, industrial and mercantile privileges shall be granted in the neutral territory.

The extension of the lease of the portion of the Liaotung Peninsula under Japanese jurisdiction is of no great importance from a strategic point of view. Now that Japan has full possession of Korea the value of Port Arthur as a naval base has diminished, if it has not entirely disappeared. But commercially the retention by Japan of Dalny, the most favourably situated and in many ways the best of ports serving the Three Eastern Provinces, is of the first importance. Unless and until the port of Newchwang be improved, the bulk of the trade of South Manchuria must pass through Dalny. Apart from its natural advantages the Japanese have provided every possible facility for the handling and storing of produce and cargoes at Dalny. Even those least enamoured of Japanese methods are fain to confess that they have left nothing undone at Dalny to attract trade. The safety of the harbourage has been secured regardless of expense, warehousing accommodation on the most generous scale has been provided and the South Manchuria Railway Company has done everything that would facilitate the handling of goods from oversea or produce from the interior.

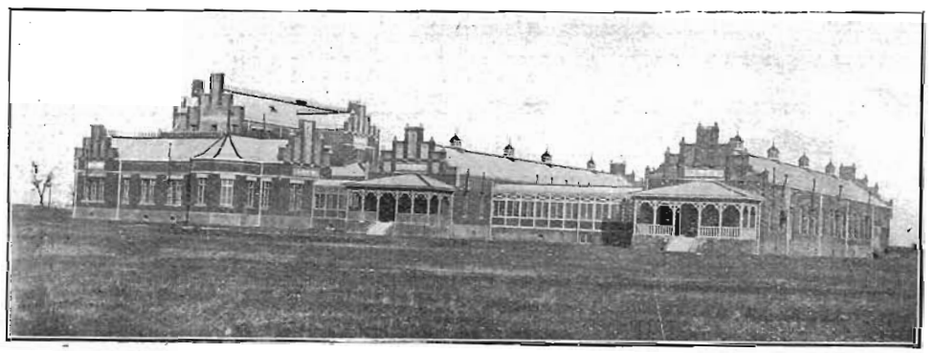
In articles published in the FAR EASTERN REVIEW last year it was pointed out that the soul of Dalny is the South Manchuria Railway. This was not an over-statement of fact. The visitor to the port is everywhere confronted with tangible evidence of the comprehensive character of the Company's activities. Most of the public services, if not all, are operated by the Company. It built the huge Yamato Hotel, which cost a million yen; it established the summer hotel at Hoshigaura, or Star Beach; it operates the water and electricity supply, runs the tramways and in fact supervises nearly all the municipal activities. In view of the intimate association between the port and the railway, the extension of lease if granted to the one had necessarily to be granted to the other.



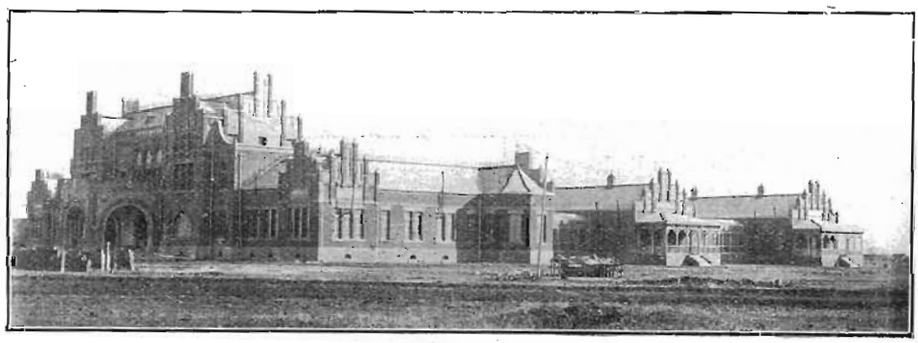
New Station of South Manchuria Railway at Mukden.



Entrance to Yamato Hotel occupying Upper Floors of Station Building.

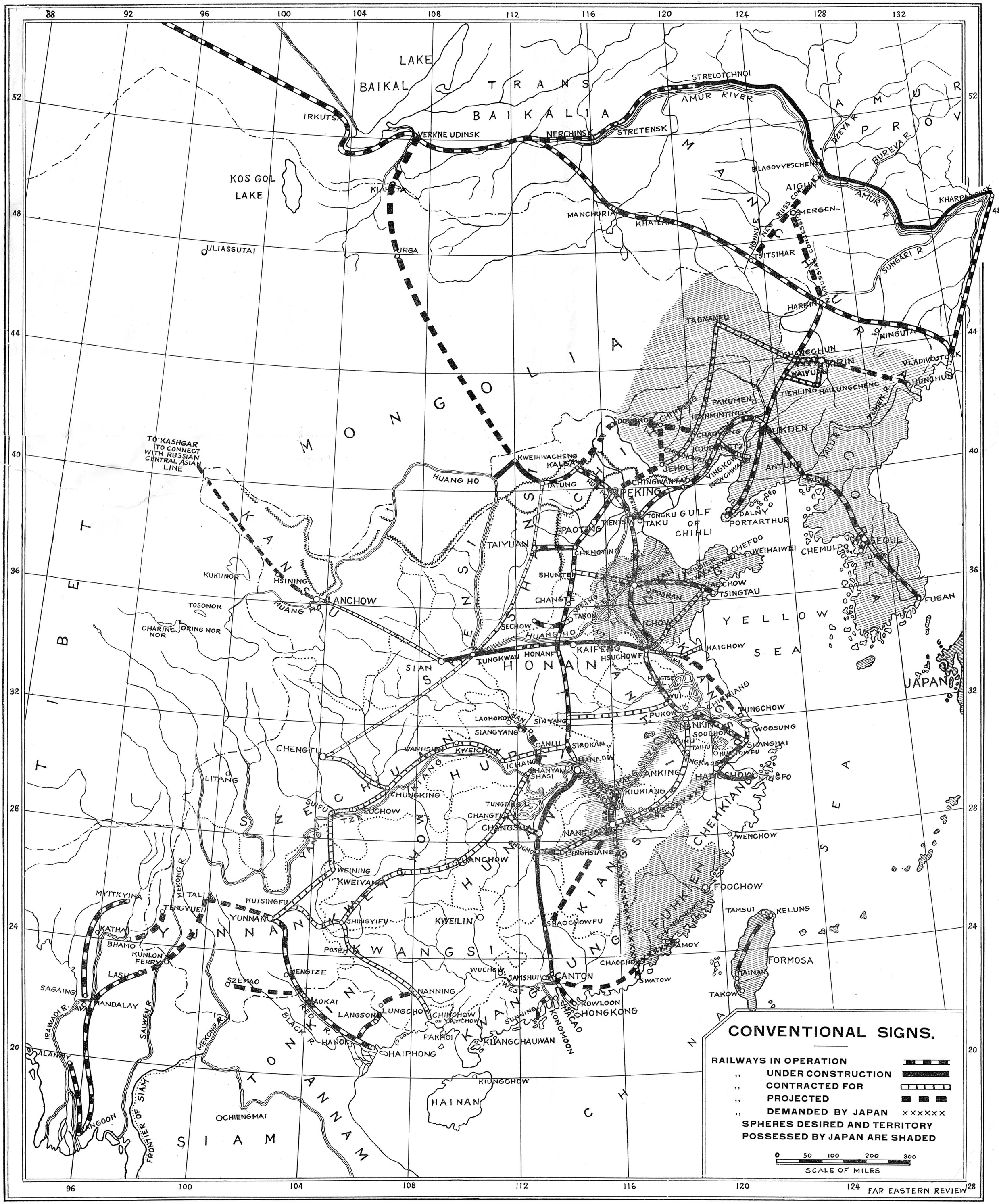


South Manchuria Railway Hospital at Mukden (side elevation).



Front Elevation of Hospital.

REVISED RAILWAY MAP OF CHINA SHOWING JAPAN'S DEMANDS.



THE CHUNG HSING COAL RAILWAY

Known as the Tai-tsao Railway, this line, something over 80 li in length, runs from the coal mines 20 li north of Yihsien down past that city to Taierchwang, the leading port of South Shantung on the Grand Canal.

TSAO-CHWANG.—Is an ordinary Chinese village of a couple of hundred families remarkable for nothing else than that it gives its name to the mines in the near vicinity. The town of note in the vicinity is Ch'i-tsun. This is a place of some 800 or 900 families, famous in all the region round about for its potteries. The great Kang water jars, used also for holding grain, some of them considerably larger than a flour barrel, are made here, while bowls and small jars are made by myriads. There are 13 kilns and each one of them can turn out between $600 and $700 Mex. worth of products per month. Nearly all, if indeed not all, the kilns are controlled by one very wealthy family of which one of the members is a Hanlin and a former Censor, Tsui by name. This town shares with Yen Hsien, in Central Shantung, the pottery trade of this section.

YIHSIEN.—Is a trim little city attractively located at the opening of a valley. It was formerly spelled Ihsien and so appears in the Bond advertisement of the Tientsin-Pukow railway where it is mentioned as the point where the German section of the railway connects with the British section. The Post Office has changed the spelling to avoid confusing the place with an Ihsien in Anhwei. The city is prosperous but is not higher than a third rate district city as regards size and trade.

TAIERCHWANG.—This is a place of about 600 families. It has a brick wall surrounding it and one very fair business street. It almost supports a telegraph office and has also a Post Office with daily mail from the South. Here is an office for the collection of revenue from boats, and another office established by the Board of Commerce, Industry and Agriculture to see that the other office does not unduly oppress the boatmen and traders. The following are some of the principal distances from Taierchwang:

S. E.	via Canal	to	Yaowan	110 li
„	„ „	„	Hsu Chien	180 „
„	„ „	„	Tsingkiangpu	360 „
„	„ „	„	Chinkiang	720 „
N. W.	„ „	„	Hawchwang	83 „
„	„ „	„	Hsia Chen	140 „
„	„ „	„	Tsiningchou	360 „
N. E.	„ land	„	Ichowfu	180 „
S. W.	„ land	„	Hsuchowfu	110 „

THE MINES.—It is plain from the above table that the outlook for the mines is very favourable. Tsining is the second largest city of Shantung, somewhat decadent now owing to the diversion of the grain transit from the canal to the ocean but still a very large and by no means dead place. Ichowfu and Hsu Chowfu are flourishing cities of 60,000 or 80,000 population and centres of populous regions. Su Chien is a prosperous district city situated on the old bed of the Yellow River from which it draws sand for its glass-works. These are under the care of several Englishmen and use large quantities of coke. The road from the mines to Taierchwang is traversed by one continuous stream of barrows wheeling coke. I counted 50 in a couple of hours. Each barrow holds 600 catties and upward and the poor fellows receive about 500 small cash per day for their toil. Most of this coke, it is said, goes to the glass-works. Tsingkiangpu is one of the big towns of north Kiangsu.

THE OUTPUT.—At the mines is at present two thousand tons a day. The coal is only from two to three hundred feet deep and in places the seam is over 20 ft. thick. The coal is of excellent quality, bearing the reputation of being the most valuable deposit in the province.

The coal is quite soft and is remarkable because of its freedom from lumps. About a hundred coke ovens are in close proximity to the mines.

The premises are quite extensive, probably three li long and two li wide. The concession granted by the Imperial Government to the company embraces a territory ten li square. The leading spirit of the company is Hon. Chang Lien-fen, formerly Salt Commissioner of Shantung. So far as now known coal is found within a region 70 li long by 40 li wide. Another company headed by a rich Chinese of the vicinity, Mr. Liang, has another, but much less valuable, concession near by. There is a great future for the mines as the railway will make such large use of their coal, no other mines beingc so onveniently within reach of it.

It is almost a certainty that in the near future a railway will be built connecting the mines with the recently opened port of Haichow, in north-east Kiangsu. This will give the mines an outlet to the ocean. The real port is Ching Kou, not Haichow. The line will be easy of construction, running a hundred miles through the fertile and populous Ichow-fu plain and touching that city.

THE TAI-TSAO RAILWAY.—The 27 mile coal road is now in operation. There is one 60 metre bridge crossing a small river at Yihsien. There are only three other bridges and all together do not exceed 70 metres in length. The grade is extremely easy, there are only two cuts and these very light ones on the entire line. In addition to the two termini and Yihsien, there is but one other station, that at Ni-kou, a scattered village of some three hundred families half-way between Yihsien and Taierchwang. The materials, that is bridges, rolling stock, rails, etc., were supplied through the firms of Arnhold, Karberg and Co., and Carlowitz and Co. It is said that the Chinese concessionaire had to make a stiff fight at Peking to keep his prize from following the path of so much other mineral wealth of Shantung in passing under German control and the matter was compromised by the arrangement that in the development of the mines German machinery should be used. It is generally supposed that there is also some German capital invested therein.

The railway however is overwhelmingly capitalized by the Chinese, nearly all Shantung high officials being interested therein, Szechwan and Chekiang also being largely represented as well as capitalists in Shanghai and Tientsin.

The Railway is almost entirely a coal road. Eight cars and three locomotives were built for this traffic, machine shops were erected at Taierchwang. Limestone is abundant in the nearby hills.

The coal yard and wharf at Taierchwang is a large affair. About 45 English acres were purchased in a bend of the Grand Canal which bounds it thus on two sides. Along these two sides 700 ft. of wharfage stone masonry were constructed while on the two remaining sides a circumvallating moat was constructed which admits boats from the Canal. The whole plot has been elevated 5 ft. above the adjacent territory.

THE CANAL.—Is sadly in need of dredging. Only boats drawing half a foot can navigate certain sections of the upper part of the route from Chinkiang to Tsining.

SHANTUNG MULES

There are raised in the southern section of the Province of Shantung mules which compare favorably with those raised in the Western States of America. Splendid mules from Shensi Province also find their way into this Province where representatives of the British and German Armies, make considerable purchases for shipment through the port of Tsingtau and over the railroad to the port of Pukow on the Yangtze River. Mules standing 14 and 15 hands high, weighing 1,200 to 1,300 pounds, and from 8 to 10 years of age, can be bought at 160 to 200 taels ($120 to $150 U. S. currency). A man at Tsinanfu, Shantung, informs the American consulate at Chefoo that he can purchase 200 to 300 animals at these prices and arrange for shipping them to the port of Tsingtau, where they may be loaded aboard steamers for shipment abroad. Tsingtau is 250 miles distant by rail from Pukow.

Smaller mules adaptable for use in mountain work can be obtained at lower prices. Southern Shantung and northern Kiangsu are noted as good breeding places for donkeys, where they are sold in lots of 100 to 200 at about $10 U. S. currency a head.

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Tsingtao-Tsinan Railway.—From November 15th, on which date the Tsingtao-Tsinan Railway was thrown open to public traffic, till January 22nd last, the earnings of the Line were: Passenger receipts, Silver Yen 119,808; Goods receipts, 177,343; Platform tickets, 116,70; Baggage charges, 1,259.70; Miscellaneous 2; a total of Silver Yen 298,529.40. The goods traffic was begun on December 15th, while platform tickets were made issuable on January 2nd for any one wishing to enter the railway platforms as in vogue in Japan.

On February 11 the distance between Fangtzu and Changtien was made one section and fare was charged accordingly. The passenger rates are to be reorganized on the old German footing, and soon will replace the existing sectional system. Shippers report that the new railway freight tariff is even lower than the former German rates.

According to the inventory prepared by the Railway Regiment in February, the rolling stock now on the Line consists of about 1,000 goods and passenger cars and about 50 locomotives. None of the locomotives has yet undergone overhauling since coming into Japanese possession.

The repairing of railway bridges, embankments, etc., damaged by the Germans and by the floods is awaiting plans and estimates to be drawn by Maj. Yamanouchi, of the Provisional Railway Regiment and Mr. K. Nakamura, the engineer lent by the S. M. R. Co., and effort to complete the repairs before the rainy season sets in will be made. The appropriation for the repairs has not yet been fixed definitely, but probably will be about Y600,000.

Kiukiang-Nanchang Railway.—The Nan Hsun Railway (Nanchang and Kiukiang) is now open from Tukiapu to within 3 or 4 li of Nanchang and is proving a great boon to Nanchang and Kiukiang replacing the steam launch system which was very uncertain. It takes about 8 hours to make the through journey by rail. A large bridge over the river at Tukiapu, in course of construction, will take a year or more to complete.

Kuangsi-Szechuan-Yunnan-Kueichow Railway.—With reference to the construction of the Kuangsi-Szechuan-Yunnan-Kueichow Railway, new steps have been taken to raise funds for its construction. The Government found that the projected line was over 1,400 miles long and that it would hardly be possible for the Central Government to raise funds for its construction within ten years. With the war raging in Europe, foreign loans are impossible and the Ministries of Communications and Interior have decided to follow the precedent of the Canton-Hankow Railway. The Authorities of the provinces concerned will be requested to raise funds from private sources to start construction work on the proposed railway.

Sin-Chuen Railway.—A group of Canton merchants have organized with Mr. Chan Lim-tin as President to build a railroad from Chun Shan to Sin Chuen. It is to be known as the Sin Chuen Railway and will connect with the Canton-Kowloon Railway at Chun Shan. Official recognition has already been secured and plans drawn up. Arrangements have been made to purchase the right of way.

Aigun-Tsitsihar Railway.—The projected railway from Aigun to Tsitsihar covers a distance of 1,100 Chinese *li*, and the cost of its construction has been estimated at $20,000,000. At first, the Government intended to raise a foreign loan for its construction, but for some reason or other, the matter has been shelved. Recently, the Governor of Heilungkiang submitted a request to the Government to the effect that as the projected line between Aigun and Tsitsihar would form an important factor in the development of that province, its construction admitted of no delay or hesitation, and that he can now raise $9,000,000 from his province while Fengtien and Kirin will undertake to raise the balance of $11,000,000. The Governor further requested the Government to permit him to issue bonds upon the proposed railway in order to raise funds to the prescribed amount, in case Fengtien and Kirin fail to contribute. The Government, in reply to the Governor's suggestion, permitted him to carry out his scheme.

The Pekin-Hankow Railway.—The Director of the Kin-Han Railway, with a view to extending the traffic of the line is about to raise a loan of one and half million dollars to double-track the line at certain points, the recent increase of traffic necessitating such a step. The loan has been sanctioned by the Ministry of Communications and will be called the "Kin-Han Traffic Development Loan," for which five classes of bonds varying from ten to ten thousand dollars will be issued. The loan will carry a monthly interest of 0.7 per cent, and will be redeemed within a period of two years. Instalments of funds will be drawn from the surplus funds of the Kin-Han Railway receipts and deposited in the Bank of Communications to repay the loan.

Chinchow-Taonanfu Railway.—Mr. Kuo-shulin, a Chinese engineer, has completed the surveying of the proposed route for the Chinchow-Taonanfu line. He brought the map of the route prepared by him to Mukden recently. He is to go over the proposed route in company with Mr. Chang Yu-tien, president, and Mr. Yang Chan-hsin, vice-president, both of whom are at Mukden. Work will be begun in April. The Chinchow-Fuhsin section will be taken up first and the entire line is expected to be complete by late autumn.

Kirin-Changchun Railway.—The traffic returns of the Kirin-Changchun Railway for January were:—Passenger receipts, Silver Yen 42,807; Goods, 69,152; Miscellaneous 135 a total of Silver Yen, 112,097 which was a gain on the figures for the corresponding month of the previous year by S. Y3,479 chiefly due to livelier movements of produce.

Congestion at Vladivostok.—Upwards of 80,000 tons of produce are awaiting shipment at Vladivostok. The Siberian and North Manchurian Railway have set apart a good portion of their carrying capacities for the transportation of military stores and it is feared that these two causes will seriously impede, if not absolutely block, traffic from North Manchuria to Vladivostok for the time being at least. The Russian Railway authorities have reserved the warehouses at Vladivostok for Siberian wheat for export to France. Beans are stored in the open. The brisk arrival of beans by railway already has taxed the capacity of the wharves, and the authorities may be obliged to decline further transportation of beans to the Siberian port for the present. Several new wharves of a temporary character have been constructed hurriedly for the exclusive loading and discharging of military stores. A dozen American steamers were in port recently, and about fifteen more were expected. All were to ship Siberian wheat for France as return cargoes.

South Manchuria Railway.—Traffic returns of the South Manchuria Railway during the first half of the current fiscal year showed a falling off of Y2,130,000, and serious deficits were feared as the latter half of the preceding working year had brought record returns. A marked improvement set in early in December and continued throughout January. During that month traffic receipts reached Y2,136,092, an increase of Y1,045,988 over the corresponding month of the previous year. At the end of January the deficit in traffic receipts, was reduced to Y477,586. Returns for the last 8 days of February show a daily average of Y93,562, as against Y81,199 for the preceding decade, and an increase by Y12,196 over the figures for the corresponding period of last year. This makes the increase in the traffic receipts from December, 1914, to February, 1915 over the corresponding term of the previous season, Y1,727,466.

Although nothing definite has been given out by officials regarding the amount of capital expenditures which the South Manchuria Railway Company proposes to invest during the next fiscal year, the total is estimated to be in the neighbourhood of Y6,000,000, as against Y12,300,000 for current fiscal year.

The estimates for railway construction, improvements, etc., have been cut down to about Y900,000. The construction of a new engine-shed at Dairen, the double tracking of the Suchiatun-Mukden Section, and other projects have been shelved temporarily. The harbour improvements will be confined to the continuation of the works now in progress, such as the new third quay, the Northwest Breakwater, the shores at Jijiko, Hamacho, etc. These will cost about Y900,000. The Land Department estimates have been reduced to a little over Y600,000 for prosecuting the incomplete work in the construction of waterworks, sewerage plant, roads, extensions of residential quarters for the Company's officials, etc. Further installations for the Agricultural Experimental Station, and all other new enterprises have been deferred. The Wharf Office estimates have been curtailed to about Y600,000, and the construction of a steel-girdered warehouse on Main Quay, postponed after the foundation were laid appears to have been put further off.

Will Tax Passengers.—The President of the Japanese Railway Board has announced that a war tax of 25 per cent. of the fares will be levied on behalf of Russia at every station in Japan country on all passengers, luggages and cargo using the Russo-Japanese connection service.

Urga Kalgan Auto Service Starts.—It is reported from Kalgan, that Mr. Prokin, a Russian, has started an automobile service between Urga and Kalgan and that the first car will run in February. The trip will be made in about four days.

To Bridge the Yangtse.—The *China Times* credits the Peking-Hankow Railway with contemplating the construction a railway bridge

at Hankow over the Yangtsze River. The site has been surveyed and the work and the cost have been estimated. It will be 3,750 feet long and 30 feet wide, and the largest span will be over 300 feet wide so that river craft will be able to pass. A double track railway will be laid.

Railwaymen to Meet.—The second Railway Union Convention between China and Japan will take place in Peking sometime in April. The Ministry of Communications has appointed 16 officials to make preparations for the coming Convention. The delegates in the coming Convention will consist of officials specially appointed by the Governments of both countries, the representatives of the various railways in both countries and the representatives of the leading steamship companies in Southern China.

Siamese Railway Receipts.—The Broad gauge or Northern line's receipts for January 1915 and January 1914 are as follows:—

	Year 2457	Year 2456
Passengers	258,500.	185,656.
Goods	180,800.	156,691.
Others	6,300.	6,621.
Total	445,600.	348,968.

The totals from April to January for last year was Tcs. 3,404,873 as against 3,199,332 in 1914.

China's Foreign Employes.—Many foreigners are employed by the Chinese Government in the Customs, railways, post-offices or other branches. According to the latest information the total is 3,948 persons, whose nationalities are:—British, 1,105; French, 1,003; German, 533; Russian, 463; American, 174; Japanese, 207; Italian 75; Austrian, 59; Belgian, 171; Others, 158, a total of 3,948.

New Shimbashi Station.—The Japanese railway authorities concerned have decided, it is reported, to rebuild the Shiotome Station or former Shimbashi Station at a cost of one million yen. According to Mr. Nishikawa, who is in charge of rebuilding, the present railway factories around the station are all to be removed to Oi-mura, and warehouses are to be built in place of the factories. The Shiotome bridge just behind the station is to be removed and a big wharf is to be built there so that about two hundred and fifty Sumida river boats can dock. The present station buildings will be replaced with a bigger new building, although some officials in the Railway Board desire to have a part of the present buildings retained as a souvenir of the famous old station. The construction work is expected to be begun after the next extraordinary session of the Imperial Diet. It is to be completed in one year and a half.

Siamese Bridge Tenders.—The Acting British Consul-General at Bangkok reports that tenders are invited by the Siamese Royal Railway Department, Broad Gauge for the supply of a steel bridge consisting of five 40-metre spans Sealed tenders, marked "Tenders for Steel Bridge," giving price per ton c.i.f. delivered on railway wharf at Bangkok, will be received, up to 10 a.m. on June 1, by the Director-General, Royal Railway Department (Broad Gauge), Bangkok, at which office copies of the specification and drawings may be obtained on paynent of 5 ticals (about 7s. 8d.) each.

New Ganges Bridge.—Despite the war, work on the second largest bridge ever constructed by British engineers, namely, that across the main Ganges at Sara, in Bengal, is up to time. A service of goods trains has been arranged for. The bridge is to be opened to passenger trains as soon as the metre gauge of the lines on the Northern side is converted to the 5 ft. 6 in. width of the Southern. Training works, 5,000 ft. long down both river banks, which cost three-quarters of a million sterling, keep the river to its course through the bridge. The bridge, which has a total river length of 5,900 ft., and, including land approaches, measures 15 miles, has cost roughly three and a quarter millions sterling. One of the principal advantages afforded will be a direct train connection between Calcutta and Darjeeling, the journey having hitherto been broken by steamer transit across the river. Apart from the convenience to the Government and the Himalaya tourist traffic, the real justification for the great undertaking will be the service rendered to the vast tea and jute growing tracts of Upper and Eastern Bengal, which will henceforward be enabled to convey their produce to the mills and docks of Calcutta with greater speed and economy.

Malay Peninsular Lines.—The *Straits Echo* learns from Singora correspondents that good progress is being made on the section of railway line between Uta-pao and the Perlis frontier. The distance is about 30 miles and on the first ten miles the earth work is already finished. The next ten miles is well in hand, and work soon will be in progress along the whole section. From the Perlis frontier to Alor Star is 42 miles. This is the backward section on the line. The line from Bukit Mertajam to Alor Star is rapidly approaching completion, whilst northwards of Uta-pao the railway is open for ordinary passenger traffic to Tung-Sawng (the junction with the Trang line) and is open for construction trains as far north as Bandon, some sixty miles beyond Tung-Sawng.

Tram Fares in Tokyo.—At the recent meeting of the Tokyo City Electric Enterprise Investigation Committee one of the municipal officials stated that the receipts from the enterprises were not sufficient to meet the repayment of the municipal loans of 90,000,000 yen to 1916 and those to the amount of 16,000,000 yen to fall due in the following year. The municipal authorties propossed raising of tram fares in the immediate future by at least 1 sen per ticket. Apparently this proposal has caused indignation among some sections of the citizens, who are backed up by prominent members of the City Assembly A certain member of the Assembly in criticising the measure is said to have suggested that it was desirable to abolish the transit tax and add the sum thus saved to the fares so that no increase in the citizens' burden would result from the attempt at appreciation of the municipal revenue.

Tram Plan.—Efforts to make the Hakone district a gigantic national park, are being furthered by the directors of the Odawara tramway company who have announced that they will extend their lines to Gora, about two miles and a half beyond the present terminus at Yumoto into the heart of the mountains, passing through Miyanoshita. At Gora, hundreds of villas will be built. The company has decided to issue a loan of yen 1,300,000, which will be raised by the Industrial Bank. The loan is to bear interest at 8 per cent. and be issued at Y97.

Manila Street Car Line:—For the first ten months of 1914 as compared with previous year, the street car company in Manila operated its cars at a decrease in net earnings of approximately 39 per cent. The actual decrease in receipts from the railway department were $48,882, or approximately 7 per cent; the increase in actual cash expenditures for operation amounted to $60,473, or approximately 15 per cent; the outlay for track and roadway, overhead trolley system, etc., increased for the period $28,866, or approximately 43 per cent; the maintenance of cars, shop machinery, and tools increased $37,363, or approximately 82 per cent; the net earnings from operation decreased $109,355, or approximately 39 per cent. During the period mentioned the company spent $117,905 in improvements over and above those mentioned.

The following table gives the number of passengers carried during the first 11 months of 1914:

Period.	1914	1914
January-June	10,441,713	10,217,900
July	1,521,929	1,692,046
August	1,537,581	1,746,263
September	1,214,588	1,685,294
October	1,510,593	1,790,381
November	1,450,775	1,776,212
Total	17.677,179	18,914,096

The foregoing shows that the number of passengers carried during the first six months of the period under discussion exceeded the number for the corresponding period of the preceding year by 223,813, or about 2 per cent. but that the number carried for the last five months of the period shows a decrease of 1,460,730, or about 17 per cent. During 1914 the company erected 4 public waiting stations along its line costing about $1,000, and added to its equipment 6 modern, center-entrance, steel cars of latest design and construction, costing $33,000, and rebuilt 20 of its old cars at a cost of $20,000.

Karachi Tram Extension.—The Karachi Tramway Co. has received a franchise to extend its tramway lines. The new line has been needed for some time and promises to be profitable. Actual construction probably will be delayed a short time, but owing to the war labor here is now cheap, and work probably will be undertaken at no distant date. The line is electric. Firms desiring to secure details of the new work should write to the manager Karachi Electric Tramway Co., Karachi, Sind, Northwest India.

Indian Railway Returns.—The recently issued Administration Report on Railways in India covers the financial year from April 1, 1913, to March 31, 1914. In that time the Indian state railways had better gross and net earnings than in the previous fiscal year, but owing to increased interest charges the percentage of net earnings to capital outlay fell from 6.48 to 6.19 per cent. Operation resulted in a surplus to the state of $27,729,765 over and above interest charges and annuity payments connected with the purchase of railways by the state, whereas the surplus last year was $27,891,530. On March 31, 1914, the mileage of all the state and privately owned railways in India was 34,656 miles, 1,053 miles having been added during the year. The gross earnings of all the railways from April 1 to March 31 were $206,0171344, as compared with $199,936,186, an increase of $6,081,158, which was partly offset by increases in operating expenses of $5,663,518. The net earnings were thus $99,322,848, as against $98,905,209 in 1912-13. There was some increase in the passenger traffic, the number of passengers carried being 457,717,900. The passenger revenue was $68,850,322, of which by far the larger proportion, $59,519,374, was from third-class traffic. The average rate for all classes of passengers, slightly over 4 mills per mile, and the average distance traveled, 36.3 miles, have not materially changed since 1884.

Atami Line Next Year.—It is reported that the Japanese government has decided on the construction of the proposed Atami railway line commencing in the next fiscal year. According to the government's plan, as reported by the Japanese papers, the construction of the line is to be finished in eight year at a cost of Y.24,000,000. For the next fiscal year, the government will put aside about Y.600,000, with which the construction of a big tunnel for the line is to be commenced. This line had been planned several years ago, and its construction was once commenced, but the work was

postponed in the time of the last cabinet, which was eager to curtail every possible appropriation for retrenchment. Other lines to be built in the next seven years are a line from Murakanu to Akita, one from Kawanoye to Saijo, that from Nayose to Simowakubetsu, and the Riumoye—Masike lines.

Szechuan-Hankow Line.—Road laying is now in rapid progress for the Szechuan-Hankow Railway up the Han river and unlike the former times all the people in the vicinity are pleased to see the work going on and expect better times after its completion. Many of the farmers have been enriched by the sale of land to the railway administration, and the prices of the low-lying farms have increased in view of the fact that by the construction of a road higher than their dykes no inundation need be feared in the future.

The Russo-Mongolian Railway.—According to a Japanese contemporary, the Russians are preparing to construct a double track railway from Kiachta to Urga. The right for building this railway is said to have been recently conceded to the Russians by the Urga Government. In taking this step, Russia, according to the newspaper report, aims at co-operating with Japan to occupy an important position in commercial dealings with the Chinese. A party of Russian engineers has been sent out to inspect the various places through which the projected line will pass. The work of building the railway will be started this Spring and the Russian Authorities expect to complete the work without undue delay.

BRIDGES

Manila, Pasig River Bridge.—Recommending the construction at a total cost of P1,280,000 of a three span reinforced concrete arch bridge across the Pasig River at the calle Rosario or plaza Moraga location, the bridge committee report (based on the recommendations of a sub-committee composed of W. L. Gorton of the bureau of public works as chairman, Jose P. Katigbak, acting city engineer. and L. F. Goodale, consulting engineer to the board of public utilities) states that four projects were considered in connection with the trans-Pasig traffic problem. These were:

(1) A tunnel under the Pasig from a point near the monument at the end of Malecon drive.

(2) A tunnel under the Pasig at the calle Rosario location.

(3) A bridge across the river near the Anda monument, and

(4) A bridge across the river at the best available point for the accommodation of traffic formerly passing over the bridge of Spain.

In considering the first of these projects it was found that the cost of a tunnel would approximate P5,000,000, which in the present state of the government finances, is a prohibitive figure.

The second project was adversely reported on by the committee for the same reason, and for the additional one that in that locality it would be practically impossible to secure land for the proper approaches.

The third project was considered desirable by the committee on account of the fact that a bridge so located would directly stimulate the development of the new port district. The estimated cost of such a structure was given at P1,500,000, only slightly in excess of that estimated for a bridge nearer the present bridge of Spain, but it was not considered that this matter was one of urgent necessity it being the sense of the committee that this project could will be deferred until a later date.

In connection with the fourth proposal the committee reported that the best available site appeared to be that at calle Rosario or plaza Moraga, where the committee recommended that P1,280,000 be spent in the construction of a three span reinforced concrete arch bridge. Of the amount so estimated as the total cost of the structure, actual construction is estimated as requiring an expenditure of P980,000, the remaining P300,000 being considered necessary for securing the right-of-way required for the approaches.

The various types of bridges proposed by the sub-committee and the estimated total cost of each is as follows:

Three span concrete arch bridge, P1,280,000.
Three span steel arch bridge, P1,150,000.
One span steel arch bridge, P1,413,000.
One span suspension bridge, P1,290,000.
Three span steel truss bridge, P855,000.

Bridge Contract for Siam.—In connection with the extension of the northern section of the Royal Siamese State Railways from Dene Chai to Chiengmai, a distance of 222 kilometres, a contract has recently been placed with the Cleveland Bridge and Engineering Company, Ltd., of Darlington, for the manufacture and delivery at Bangkok and Chumphon of no fewer than 27 open lattice type girder-bridges of varying dimensions ranging up to 45 metres in length.

The northern section of the Royal Siamese State Railways, in which the present contract lies, has for some years past been under German direction, and a considerable portion of the steel-work and rolling-stock equipment has hitherto been obtained from Germany, but the contract in question was submitted to tender by the leading British and American bridge and structural engineering firms.

COMMERCE AND INDUSTRY

China's Foreign Trade.—Since the outbreak of the European war, China's exports to foreign countries, especially to the belligerent countries, have been greatly decreased. According to the return of the Chinese Maritime Customs, the following figures represent the value of native goods exported to the various belligerent countries during 1914:—

England	Tls.	112,280,000
Germany	„	6,110,000
Russia	„	31,800,000
Japan	„	138,310,000
France	„	4,280,000
Austria...	„	3,410,000
Belgium	„	13,130,000

Cultivated Land in China.—An approximate estimate of the number of mow (approximately one-sixth acre) of cultivated land in the various provinces gives the following particulars:

Province	mow
Chihli	135,800,000
Shantung	75,970,000
Shansi	101,830,000
Honan	87,940,000
Kiangsu...	58,600,000
Anhui	74,810,000
Kiangsi	89,480,000
Chekiang	56,670,000
Fukien	66,320,000
Hupeh	91,410,000
Hunan	103,380,000
Shensi	95,270,000
Kansu	96,966,000
Szechuan	165,653,000
Kuantung	129,970,000
Kuangsi...	71,466,000
Yunnan	127,740,000
Kueichow	64,776,000
Sinkiang	81,120,000
Manchuria	241,805,000
Total.....	2,146,962,000

Plan Silk-Weaving Company.—The Hangchow silk piecegoods merchants have sent Mr. King Yung-chung to Shanghai as representative to confer with silk merchants at this port as to the advisability of establishing a large silk-weaving factory to be worked with machinery on modern lines, as a checkmate to the rumoured intention of certain Japanese to form a joint concern with certain Chinese to do this kind of business. After several meetings, the silk piecegoods merchants of Hangchow, Soochow and Shanghai have decided jointly to float such a company. Their idea is reported to have the approval of the Chinese General Chamber of Commerce, the local authorities, the Native Products Protection Society and many prominent merchants of Shanghai. It is also understood that General Chu Jui of Chekiang will be asked to memorialize the President for protection and support. The capital of the proposed factory will be $3,000,000 at least. Many proprietors of large piecegoods shops have gone to Japan to study the methods of machine silk-weaving there and it is said that most of the Japanese mills are working with machinery made in Germany. Mr. Sheng Ping-chang, a Chinese who has been successful as a silk-weaving factory proprietor at Osaka, has returned with his family to China with the intention of transferring his own establishment from Osaka to Chapei in the Shanghai district where he has secured a plot of land.

Tsinan Match Factory.—The match factory at Tsinanfu, called the Chen-Hua Match Co., Ltd., has a capital of $200,000, of which one half is paid up. Fixed capital amounts to $53,000. The company has an official monopoly, no factory of a similar nature being permitted within the radius of 300 li. The superintendent, Tsung Liang-pi, has considerable experience in the business which he acquired during a 20 years' residence at Osaka. At present, 200 laborers are employed, of whom 200 are engaged in the manufacture of boxes. Their wages vary from $6 to $10 a month with board. The daily output is said to amount to 25 tons, one ton being made up of 6 cases, each of which contain 240 cartons of matches. Wholesale price is Tls. 23.50. For some time, the factory was closed owing to the lack of material, but is now in full operation again.

Development of Yunnan.—With its fertile soil and mild climate, Yunnan has become a promising field for various industrial undertakings, promoted in recent years under the auspices of the local officials, with some success. Formerly, the breeding of silkworms was hardly known, but silk is now one of its staple products and the amount of its annual output steadily increases. The process employed by the natives in manufacturing the silk is primitive and imperfect and the silk often loses its lustre and colour so that it cannot meet the requirements of foreign markets. To remedy this evil, the Governor has ordered magistrates of the various districts to establish technical schools to teach the people the scientific method of rearing silkworms, manufacturing silk and cultivating the mulberry trees.

In order to improve agriculture, agricultural schools and seminaries have been established and, under their auspices, exhibitions of agricultural products have been opened. Teachers are employed to deliver lectures to farmers on scientific methods of tilling the soil. To improve irrigation systems of the province, a central Conservancy Bureau has been established in the capital with branch offices in the various districts.

Within recent years cotton plants have been introduced and two varieties now are generally cultivated. One is the Tungchow cotton plant and the other is an American variety. The weather and the soil of the province have proved favourable for the growth of the American plants, which yield fine crops. Yunnan is expected soon to rival the cotton-producing provinces in the Yangtze valley.

SCHEDULE OF INTEREST AND AMORTISATION

Year.	Interest	Repayments of Capital.	Balance of Loan outstanding.
1.	1,440,000	.....	24,000,000
2.	1,440,000	.....	24,000,000
3.	1,440,000	3,460,000	20,540,000
4.	1,232,400	3,667,000	16,873,000
5.	1,012,380	3,887,000	12,986,000
6.	779,160	4,120,000	8,866,000
7.	531,960	4,368,000	4,498,000
8.	269,880	4,498,000	nil.

CHINA'S MOST INTERESTING RAILWAY

With the recent opening of the railway to Tatung, through traffic has been made possible between stations on the Chinese northern railways and this distant city in Shansi, and the authorities of the Peking-Kalgan railway and the Tientsin-Mukden railway have now arranged for through trains to run from Fengtai to Tatung and vice versa. Passengers from Tientsin will be able to book right through, and will take the Tatung train at the Fengtai junction. A train leaves there every day at 10:35 in the morning, and reaches Kalgan at 5:43 in the afternoon. Passengers will stay over night at Kalgan, and will leave the following morning at 8:30 for Tatung, arriving there at 3:10 in the afternoon. For the return journey the train leaves Tatung at 8:50 in the morning and arrives at Kalgan at 3:30 p.m. The following morning the train leaves for Fengtai at 7 p.m. and arrives at Fengtai at 1:54 p.m.

In the FAR EASTERN REVIEW of August, 1913, we published a description of this railway. The final section was then in course of construction. That is now completed, and the line is being pushed on still further. Tourists travelling with a desire to see the country will find the journey over this railway one of the most interesting and picturesque in China. The railway climbs up the famous Nankow Pass, where the Great Wall of China is strikingly in evidence, to the plateau, when it traverses interesting country to Kalgan. Thence river valleys are followed, and mountain ridges skirted to Tatung, walled cities, further lengthy sections of the Great Wall, and rolling country being greatly in evidence. There is none of the monotony of great plains that is so conspicuous a feature of the eastern section of China. Here are the mountains with the variation which mountainous country affords.

THE HWAI RIVER CONSERVANCY

In this issue we publish the full report of the Commission which was despatched by the American National Red Cross to report upon the feasibility of conquering the flood propensities of the Hwai River. Colonel Siebert and his staff of engineers made a careful investigation of the affected territory and conclude that the necessary work can be carried out not only to avert floods but also to reclaim a large and rich area of country. Colonel Siebert's report has been delivered to the American National Red Cross and there active work ends for the nonce. The great war in Europe has interrupted this engineering scheme as it has interfered with many other propositions where finances are required throughout the world, and it is felt in certain quarters in America that it will be some time after the conclusion of the war before money will be available for what is regarded as a purely philanthropic work when there will be such a large demand for money for essential reconstruction purposes in Europe. In order to give the American National Red Cross an opportunity to complete the task upon which it has already spent considerable money, the Chinese Government recently extended the option granted on January 13, 1914, for another year. This option gave the American National Red Cross a year in which to prepare and effect a Hwai River Conservancy Loan. The amount of the "loan is set down in the option agreement at $20,000,000 or such sum as may be found necessary, after complete surveys have been made, to carry out the work of improving the water courses embraced in the Hwai River district . . . and the Hungtzu Lake, together with the contemplated outlets to the sea and the Yangtsze River." The agreement provided also that the loan should bear interest at the rate of five per cent per annum, the price of issue of the bonds to the public to be fixed according to the most favorable market price of other Chinese bonds. The agreement further stipulated that the work should be carried out under a percentage contract by an approved construction company, and in the early stages the name of Messrs. J. G. White and Company, of New York, was connected with the proposition. Considerable interest was exhibited in the scheme in America and before the European war broke out it was stated that the capital necessary was practically available. Such is not the case now, though the American National Red Cross is hopeful that the money will be forthcoming in due course. Everything, naturally, depends upon the duration of the war. In the meantime negotiations are proceeding, and pending the decision of the Red Cross the Chinese Government, through the Conservancy Board, is making further investigations and collecting data in the Hwai River region, the possession of which will be valuable and expedite work if it is eventually undertaken on the scale originally contemplated.

SHANTUNG CATTLE EXPORT

An American firm was engaged at Tsingtau in exporting cattle to Vladivostok. The representative of this firm entered the interior of the province and purchased cattle directly from the Chinese owners, or in the regular market towns, where all kinds of produce are exposed for sale at regular periods of five days. Exports to the Philippine Islands were formerly made from Shantung, but, owing to the prevalence of anthrax and other cattle diseases, the importation into the islands was prohibited.

As cattle are not grown in China to any great extent, there are no large cattle ranches, each small farmer raising such stock as he may himself need. Cows are not used for milk by the Chinese people, but are yoked with oxen, or with any other available animal, and used in cultivating the fields. Foreign buyers can afford to pay prices which appeal to the owners of cattle.

In a few places in the province, especially those towns where Occidentals are living, the Chinese raise cows for milking purposes, and even the better-class natives are taking kindly to the use of milk. It is the fear of typhoid germs in the milk that makes the sale of the tinned products so large among the foreign population of China.

Efforts have been made to introduce German cattle in Tsingtau, but without success. The local cattle are apparently more or less immune from the effect of anthrax and other diseases, as they continue living and thriving even with these diseases prevalent about them. Foreign cattle, however, die almost immediately. A few years ago the German Government brought out a dozen of the finest breeds of German cows, but within two weeks after arrival they had all died. Doctor Martini, a German bacteriologist, for many years chief assistant to Doctor Koch, was sent out to investigate the cattle diseases, and endeavor to eradicate them within the German territory. So far as he can discover the prevalence of anthrax has been greatly exaggerated, although undoubtedly other cattle diseases exist.

There were shipped through the port of Tsingtau from central Shantung during the year 1913, upwards of 93,000 quarters of dressed beef, the bulk of which was destined to Vladivostok for the use of the Russian Army. Two thousand to three thousand head of cattle a month are being shipped from Tsinanfu via Tsingtau to Vladivostok for this purpose. These cattle weigh 800 to 900 pounds each and sell for about 3 cents a pound on the hoof. It costs $20 U. S. currency per carload of 15 head to ship them from Tsinanfu to Tsingtau, where they may be loaded upon steamers which come alongside piers.

The Chinese populace eat little or no beef, with the exception of the Mohammedans, considerable numbers of whom live in Shantung. Tsinanfu appears to be the center of the export trade in cattle for Shantung and southern Chihli.

IMMIGRATION.

Population of Japan.—According to the latest census taken by the Government in connection with the compilation of the poll-book for the general election, the following numbers of general and voting population were found:—

Total population (Chosen, Karafuto and Taiwan not included)	55,125,272
Number of houses	7,734,340
Voters for Lower House	1,503,650
Voters for Local Assemblies	2,440,745

Japanese Abroad.—The Commercial Bureau of the Foreign Office has recently published statistics of Japanese residents in China, British India and other foreign countries, classified according to their domiciles and vocations. According to the statistics the number resident in foreign lands at the end of July 1914 was 358,711 persons (230,496 males and 119,215 females), the figure showing an increase of 117,440 over that of the corresponding time of the previous year. The figures are tabulated as follows:—

China (including Manchuria)	121,956
British India, Australia and other South Sea islands	6,661
The United States	171,581
Europe including Canada and European Russia	3,945

With regard to the occupations, farm labourers are in greatest number. Of 121,956 residents in China more than 6,000 are engaged in commercial and industrial lines.

Japanese in Shantung.—As a result of the sudden inrush of Japanese into Shantung immediately after the fall of Tsingtau, the Japanese in that province have now reached a significant number. The following is a list of the number of Japanese in various towns in Shantung compiled last month. Tsingtau, 5,270; Tsinanfu, 597; Fangtze, 34; Litsun, 2,098; Weihsien, 56; Taitungcheng, 994; Changtien, 45; Kiaohsien, 67; Haoshan, 325; Kaomi, 78; a total of 9,564.

Japanese in Manchuria.—Eliminating the garrison, the number of Japanese residents in Manchuria, which was over 40,000 in 1907, increased to above 73,000 at the end of 1914. But the rate of increase of the Japanese still compares poorly with that of the Chinese. As an illustration of this, the number of the Chinese, which was only 8,000 at the end of 1900, had increased to 41,000 at the end of last year.

According to a Japanese newspaper, a census taken at the end of last month by the Japanese authorities shows that there are 48,596 Japanese immigrants in the Kwantung Province, and 32,769 people in the adjacent territory along the Manchurian railway. This shows an increase of 3,000 immigrants against the census taken last year and 9,000 against that of the year before last. It is estimated that at the present rate of increase, Japan will have at the end of this year 100,000 colonists in Manchuria.

Japanese in Korea.—At the end of November last, the Japanese population in Chosen was 293,530, of which 158,284 were men and boys and 135,246 women and girls. This indicates an increase of 21,310 persons in one year.

S. M. Railway Colonists.—The Land Department of the S. M. R. Co. is satisfied with the results of its experiment in settling a number of Japanese agriculturists in the Railway Area at Tiehling. It is planning to introduce twenty new settlers with their families into the Railway Area at Tiehling and Kungchuling this year.

Fewer go to Singapore.—From January to November, 147,150 Chinese immigrants arrived in Singapore against 218,536 in 1913; and a yearly average 1904-13 of 192,685.

Heilungkiang Colonization.—According to reliable returns, Fengtien Province is said to contain about 27,000 paupers. The Chinese authorities intended to settle them upon waste land in Heilungkiang last year. Gov. Chang, who is moved by the alarming fatalities from the cold, has decided to carry out the colonization plan and has drawn S. Y60,000 from the Provincial treasury for the purpose. The transportation of indigent emigrants was begun on March 2nd.

On to the Philippines.—The *Tokyo Mainichi* is informed that as a result of investigation of conditions in the South Seas it was found that in time of the harvest of rubber Japanese laborers will be needed to do the work, although as laborers the cheap natives may be better to employ than the Japanese, in point of price. But the Japanese are the better workers. Then Japan should make preparations to send men to the South Sea Islands. Nay, Japan should not confine her efforts to the islands taken from Germany. The Philippines are only a step from Japan's Formosa. There are already 2,000 Japanese in the Philippines. More should be sent, as they are welcomed by the Americans there.

Those islands are welcoming the Japanese, as if they were of their own race. In olden times some Japanese in order to worship Christ left Japan and settled down in different parts of the Philippines. Their descendants are to be found there, to the number of 400,000. The name of the race of Bugis(?) may have come from the Japanese word Buke, which means a family of warriors. At any rate, emigration to the South Sea Islands should be encouraged. The Philippines are suitable for Japanese immigration. One man can gain 50 yen a month by raising hemp. Deducting living expenses, he should be able to save 30 yen a month. There are other things which can be raised besides hemp. There should be a systematic emigration started in Japan to these South Sea Islands.

Japan to Return Islands.—"It is officially announced on January 22 that the German Islands in the South-West Pacific seized by the Japanese are to be handed over to an Australian naval and military expedition in accordance with the promise made by Japan earlier in the war," says the *London and China Express*. "A force will be despatched by the Commonwealth, and will remain in occupation until the termination of the war, when the matter of the ultimate disposal of the Islands will be a question for consideration by the Allied Powers. It is too soon yet to discuss what will be the final destiny, but we may note the loyalty that Japan has displayed in the matter. It would have been quite legitimate for our Ally to have herself held the Islands until their eventual fate is determined at the close of the war."

Later reports are that a colony of Japanese already is in occupation of the more favorably situated islands, while two expeditions of scientists have been sent to investigate resources of this new Japanese territory.

Manila's Population.—The annual report of the Director of Health at Manila states that, contrary to general opinion, the number of Americans increased during the past year in Manila from 4,174 to 5,474, a gain of 1,300. The number of Spaniards also increased by over 1,000. The census of Manila shows an increase of 32,534 over the year 1910, the city now containing a population of 266,943, divided as to nationality as follows:—Americans, 5,474; Filipinos, 236,946; Spaniards, 4,406; Other Europeans, 1,506; Chinese, 16,657; Other nationalities, 1,960.

PETROLEUM

Japanese Petroleum Production.—According to consular reports, the total output of petroleum in Niigata Prefecture during the first half of last year amounted to 882,962 koku (33,058,719 gallons), an increase of 81,373 koku (3,129,666 gallons) on the figures for the corresponding months last year.

The petroleum industry in Japan is almost entirely in the hands of two companies, the Nippon and the Hoden. The former was promoted at Amase, Niigata Prefecture, in 1888, with $55,000 capital, which has been increased to $5,000,000. The latter was formed at Nagaoka in 1893, with $7,500 capital, which has been increased to $7,500,000. Japan's daily output of oil was about 5,000 koku (192,300 gallons), 90 per cent. of which was produced by the two companies. The Nippon Petroleum Company's Kurokawa well, however, has recently changed the whole situation, its daily capacity of 10,000 koku (384,600 gallons) thus greatly increasing Japan's output.

This increase has not been an unmixed blessing since the sale of lighting oil has fallen off steadily as the consumption of gas and electricity for lighting purposes has increased. The yield of kerosene in this country has been on the steady increase as the result of employing rotary borers at the different oil wells in the latter years. In the past year, for instance, the whole yield reached 2,400,000 koku, a gain by more than 600,000 koku on the previous year. The consumption on the other hand fell off to an unproportionately large extent. Therefore, the stock in hand has been accumulated to a surprising degree.

Shell Company Holdings.—The Shell Transport and Trading Company has reported that the products owned or controlled by their associated companies in 1914 amounted to: Dutch Indies 1,539,000 tons, Sarawak 65,000 tons, Egypt 103,000 tons, Russia 1,526,000 tons, Roumania 466,000 tons, United States 786,000 tons, and Mexico 301,000 tons, a total of 4,786,000 tons.

The Anglo-Saxon Petroleum Co.—The following information of the progress of the Company at Miri is from the Anglo-Saxon Petroleum General Manager's report for 1914:—

The "Anglo-Saxon" staff comprises 30 Europeans, 10 Chinese and other clerks, and 1 Hospital dresser. The total muster roll on December 31st, 1914, was 900, as compared with 764 on December 31st, 1913. Of the six wells drilling on January 1st, 1914, five have since been brought into production. During 1914 sixteen new wells have been begun, and 14 are now producing. The total production of crude oil during the year was 64,510.77 tons (compared with 26,067 tons for the year 1913) and of this 58,328.77 tons have been shipped. The machine shop and a large smith's shop, also a saw-mill, have recently been completed. Additional storage tanks—two of 500 tons and one of 200 tons—have been completed, and a further 4,000 ton tank is in hand.

The most conspicuous achievement during the year was the laying of 10,000 feet of 6 inch pipeline on the sea-bottom to reach a depth of 18 feet at low-water, enabling us to load directly into tank vessels of 2,500 tons capacity, and entirely avoiding the necessity for towing tanker lighters over the bar. The preliminary work involved the making of some 4,000 feet of embankment through swamp land on which to lay runways. The final stage, that of hauling the line out to sea, was undertaken in September by Capt. H. Westers, the "Anglo-Saxon" Marine Superintendent for Singapore. The first vessel to load from the sealine was the M. V. Vulcanus, on September 12.

High Rate on Gasoline.—The Philippine Board of Public Utilities Commissioners, in a case just decided between the Standard Oil Co. and the Philippine Railway Co., has decided that the railroad is justified in charging a higher freight rate on gasoline than on petroleum. The Standard Oil Co. brought a complaint to the board based upon a charge of $0.119 per case for gasoline between Cebu and Carcar as against a charge of $0.0388 for petroleum.

more economical for China to build her roads by the granting of railway concessions to foreign capitalists. There is neither the money nor the experience in this country to make it profitable to undertake much railway construction on our own behalf. The basic principle for the success of agricultural developments in China is the increasing of the means of communication. Large areas at present not under cultivation, or sometimes under but very sparsely cultivated, can be turned into vast productive districts as soon as means are afforded for the export of the products—whether domestic or foreign export.

"It is safe to say that for the next twenty years at least China will do but very little manufacturing. The development of industry, while growing, is barely recognizable. During the period mentioned the improvement of purely agricultural pursuits will be the paramount work of the Government. To bring the farmer to a market is the real work of China for some time. Foreign countries at present take a great deal from us. The main agricultural exports can be classed under beans, sesame seed and tea.

"The mining industry in China is in its infancy, and nothing has been done to amount to much. There has never been a geological survey made of the country, and there are at present not enough experts in China to do this work. Last year mining regulations were issued, but some people do not feel that the Government has allowed sufficient participation for foreign capital. At present the foreign capitalist is allowed 50% only, and by law is not given the right to have majority control. Some think that this will discourage the investment of foreign money, but, of course, there is provision for the making of special arrangements for foreign participation. We feel that we should do all we can to encourage money from abroad for the development of these mines. A lack of communication is another reason that more mines have not been opened up to date.

"The Government as yet have taken no steps to develop water power. I firmly believe that this will be made one of the most popular means of Government revenue if properly handled. I know of places in Shansi where our railway engineers say that there is enough power to generate 2,000,000 H. P. The Government have not as yet realised the importance of water power, therefore, up to date, no special interest has been manifested. Personally I feel that this is one of the most important resources that we have to develop. Scattered over the country there are a few mills run by water power in the crudest of forms, and at most a power of 20 h.p. is generated.

"No practical conservation policy has been promulgated beyond the establishment of a Conservancy Bureau under H. E. Chang Chien, which has the definite undertaking of the Hwai River Conservancy in hand. In the past the superstition amongst the people owing to their belief in the 'air and water spirits' has been a reason why the Government have not given more attention to the matter of conservation, and the fact that China hasn't enough money to carry out projected schemes is an added reason for the delay in this great work. We would welcome especially British and American capital in this regard. It may be safely stated that 90 per cent. of the superstition existing in China has now gone.

"In regard to the domestic issue of bonds we were most successful with our issue last year amounting to $16,000,000—in fact it is interesting to note that this issue was over-subscribed to the amount of $8,000,000. We did not follow the methods used in foreign countries of returning the over-subscription but merely increased the original issue to $24,000,000. The new issue which has just been placed on the market amounts to $24,000,000, and we are receiving the assistance of the foreign banks in this matter. The assistance of foreigners has been asked not only to give the Chinese people confidence in our bonds, but to invite foreigners also to buy, thus increasing the general confidence of the public in China's bonds and enhancing the credit of the Chinese Government. I believe firmly that this issue will meet with as much success as our issue of last year. As to the Chinese buying public, I must admit that two-thirds of the purchasers of bonds do so not as a business proposition but out of a sense of patriotism, and only one-third of the public buy these bonds as an investment. Out of the present bonds at least ten millions will be subscribed by interior Chinese and the rest will be subscribed by those in the treaty ports.

"The total national indebtedness of China is approximately two billions of dollars. I cannot give the exact figures without looking them up, and this indebtedness as stated is in Chinese dollars. Up to date there has been no work carried on to figure out the per capita wealth of the Chinese people, and it will be some time before such can be undertaken.

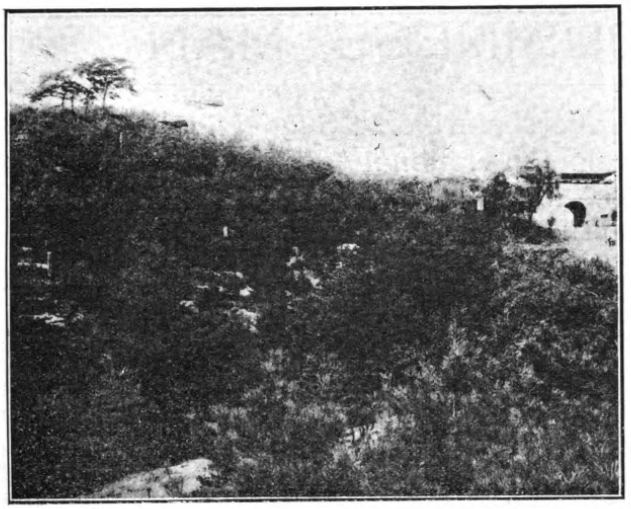
"The political system of China is the Presidential system. We have at present a Council of State, and to this body will soon be added the National Legislature which as yet has not been convened. We will have only one House, or it may be decided that the Council of State remain as the Upper House. At present the Council of State is acting in the capacity of a National Legislature. We have at present a Provisional Constitution, and the Council of State and National Legislature were decided upon through the authority of this Constitution. The President received his powers from the Assembly. The Assembly was formed by the convening of two representatives from each Province and four from the Dependencies. This Assembly was convened in March of last year. Each Province had an electoral body composed of two electors from each Provincial District. These electors in general convention selected the two Provincial representatives who were represented in the Assembly at Peking. The Legislature will be elected by the people but not on the basis of universal suffrage. The voting franchise will be divided amongst three classes of people, and this classification will depend upon three qualifications (1) age, (2) education, (3) property. The number of representatives from each Province will depend upon the population of the Provinces."

SOUTH CHINA RAILWAY SITUATION

Railway development in the South China field (writes U. S. Consul-General George E. Anderson, of Hongkong, on Dec. 21, 1914) has not only been held back by the war in Europe and the effect of the war upon Chinese affairs in so far as new work is concerned, but apparently it has stopped to a considerable extent even the work preliminary to future development. In the immediate vicinity of Hongkong there is practically nothing being done, except in the slow extension of the Canton portion of the Canton-Hankow line, which is being pushed a little farther north all the time, the work being arranged for out of the earnings of the portion of the new road now in operation. The Sunning Railway is also pushing along its further development with funds from its own earnings. About 20 miles of the extension of the road to the sea will soon be ready for rails, and the bridging and other work is being carried along with fair advancement.

In the Yunnan field there has been no development whatever for several months, work having ceased to all intents and purposes before the opening of the war in Europe. The Province as a whole is moribund and in railway matters it is losing much of the benefit of work which has been done in the past. The proposed railway from the French railway at Mengtse to the Kochiu tin mines is still without beginning, though details as to survey and equipment have long ago been worked out and at one time the company concerned had the money for its construction and work was about to commence. The American engineer in charge of the work resigned some time ago and a Greek engineer was employed for a time, but at present the Chinese interests are working with native assistance only. The survey work on the line to Nanning is being looked after in a way by a Chinese party, but without foreign supervision. There is in fact for any of these undertakings at the present time, neither men, money, nor direction. Nevertheless in most of the undertakings the native staffs continue to draw pay.

It is unlikely that there will be any further railway development in south China until the war in Europe is over and international finance is readjusted and also until prospective political troubles in China have been cleared away. Demand for railway material and equipment for roads now in operation in this part of the country is likely to be limited to only that which is absolutely necessary for the operation and reasonable care of the roads concerned.



FIFTH YEAR SHOWING HILLSIDE FULLY COVERED BY FOREST GROWTH

Mr. Bailie's interest in reafforestation is a natural outgrowth of his work in relieving famine sufferers in the city of Nanking. Instead of distributing relief in the form of money or food he found it desirable from every point of view to furnish well paid work instead, and his attention was naturally directed to the extensive slopes of Purple Mountain lying just outside the city walls. Through the help of influential Chinese in Nanking and Peking, permission was secured from the Government to use the land on the mountain, and Mr. Bailie thereupon proceeded to reafforestate or otherwise to utilize such of the land as was suitable for his purposes. The good land at the base of the mountain was put to agricultural use, land higher up was used for the growing of fruit trees which have been shown to flourish in that locality, and much of the land which remains has been planted with various species of forest trees.

Such work has naturally had far more than local influence and steps are now being taken in various provinces to form similar associations and to inaugurate similar projects. A large percentage of the land now lying idle throughout China is owned by the Government, but legislation exists by which private individuals or companies can acquire the use of it under very simple and generous terms. It will probably not be practical for the Government, at least for several years to come, itself to undertake reafforestation on a very extensive scale; but it can, and doubtless will, encourage private individuals to do that work for themselves. The general objects to be striven for are simple and clear in order to enable each acre of land in China to be put to its most profitable use. It is obvious that agricultural land now lying waste should be put under intensive cultivation; that the idle lands on the hills should be planted with fruit-trees whenever soil and climate are suitable and when there is a profitable market for the fruit; and that the steep crests of the hills and mountains and rocky slopes should be made to bear heavy forests of the most profitable kinds of wood. Forest planting fortunately is sufficiently profitable to induce private individuals to take up the work as a business investment, and this is especially true under the conditions which we find in China, for here labour is abundant, remarkably cheap and highly efficient with proper supervision and training; a greedy market exists on the ground, thus difficulties of transportation are avoided; and the land now lying idle can be secured at nominal cost. On account of the heavy demand for fuel and for small round timber for construction purposes it is not necessary to wait for a long period of years before the newly planted forests begin to produce returns.

It is possible, under these conditions, to employ a short rotation instead of waiting for the production of large trees necessary to yield saw-lumber. Even under comparatively adverse conditions so far as labour, cost and transportation are concerned, forest plantations have proved a decidedly profitable investment and their increased profitableness under the exceptionally favourable conditions we find in China is therefore apparent. That the soil and climate are excellently adapted to forest growth is proved in the most conclusive manner by the presence of young trees scattered almost everywhere over the bare hills and mountains which only need a chance to grow in order to produce fairly good timber. Among these species are oak, maple, chestnut, hack-berry, pine, willow, ailenthus, elm and many others. There are also found trees of pear, persimmon, cherry, peach, etc., but the unceasing activity of the searchers for fuel seldom gives the young trees a chance to develop into more than very small shrubs, although in a few localities fairly extensive forests are found.

In any forest work in China one of the first requisites is of course protection both from fire, and, which is even more important, from fuel gatherers. That this involves a certain amount of difficulty no one will deny, but that the problem is by no means beyond practical solution is proved by the success which has attended such efforts in many localities which the writer has had the opportunity to visit.

Those who have been most active in the inauguration of the forest work in China have realized that it is the young generation to which the country must look for the work of actually putting into effect the policies which the older and more experienced men may formulate, and to meet this need there has recently been opened a Forest School in the University of Nanking. Seventeen students have matriculated in the course; of these six come from Tsingtau, where they formerly studied forestry under the German regime, five hold scholarships from the Provincial Government of Anhui, three are sent by the Governor of Shantung, and three more hold scholarships from the Committee of the Famine Relief Fund. Four other Chinese students are studying in the Philippines and will return to their home country on completion of their studies.

While the work which has so far been completed, or which is now being carried on, is extremely small in proportion to what should be done and what will undoubtedly be done in the future, still a start at least has been made, and we can reasonably expect that from this time on the work of forest reafforestation in China will proceed with constantly increasing momentum.

CHINA'S RAILWAY FORESTS

The Ministry of Communications has achieved considerable success in the work of afforestation along the Kin-han Railway Line. The Director of the Tientsin-Pukow Railway has submitted a petition to the Ministry recommending that similiar steps be taken along this Line. He says that the places in the vicinity of Ku Chen, which is extensively interspersed with mountains and hills, provide plenty of scope for the work of afforestation. Only a small amount of money is required for the enterprise, but the profits accruing will be a very large one. His project has been approved by the Ministry and an official has been appointed to proceed to commerce the work.

AGRICULTURAL EXPERIMENT STATIONS

The Minister of Agriculture and Commerce, Mr. CHANG CHIEN, has reported to the President on the results of his inspection of several experimental stations visited by him in the course of his journey a few weeks ago from the capital to Nantungchow. He found good in progress at the afforestation stations at Changchinghsien in Shantung, at the cattle-breeding stations in the valley of the Shaochi Ho in the Fengyang district of Anhwei, and the forestry station on Purple Mountain at Nanking. On arriving at Natungchow the Minister selected sites for experimental stations for cotton cultivation. A site needs to be chosen also for experimental work in sugar cultivation in Kiangsi, a matter into which the Minister will enquire further in due course. Along whole line of the Tientsin-Pukow Railway there is need for considerable afforestation work, and such work would not only greatly ameliorate the lot of the local inhabitants by increasing their wealth, but would also prevent the serious danger of wash-outs by which the railway is periodically threatened in the rainy season. The Minister further reports that he has signed a preliminary contract for the purchase of 500 head of merinos, to be imported into China in healthy and good condition, for breeding and experimental purposes.

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Chinchow-Chaoyang Line.—"In June last the Foreign Office, Tokyo," says the *Manchuria Daily News*, "made an announcement that, in 1913, the British Government proposed to lay a railway line deviating from the Peking-Mukden Line at Chinchow, east of Shanhaikwan, and running north to Chaoyang, and that Baron N. Makino, the then Foreign Minister, supported this proposition in March, 1913. This was very heartily deprecated by the public, and is regarded as one of the serious blunders made by the Yamamoto Ministry, and the Seiyukai Party, which constituted the mainstay of the Ministry. The action for permitting Baron Makino to sign away a concession which means an encroachment upon Japan's sphere of influence in Eastern Mongolia is not forgiven by the people. A report is now in circulation that the British Government is exercising itself strenuously to secure the concession to extend the railway line to Dolonor via Chihfeng (one of the seven places to be opened to international trade) over a distance of about 320 miles. Sir John Jordan, British Minister at Peking, is alleged to be the prime mover of this new scheme, which, if realized, would mean the establishment of British interests in the midst of Japan's sphere of influence. The Taonanfu-Jehol Railway in project under Japan's initiative would then be divested of its intrinsic value. If the Okuma Ministry were to repeat the blunder committed by its predecessor and to give its consent to the extension proposition, it would bring the hornets' nest about its ears. The enlightened Japanese, who, true to the spirit of the Anglo-Japanese Alliance, is ready to pay every respect to the legitimate British claims in the Far East, fails to comprehend how it is that some Britishers betray their excessive eagerness to trespass upon Japan's sphere of influence not only in Eastern Mongolia but also in Shantung." Choice!

Push on to Fengchen.—The railhead of the Kalgan-Suiyuan Railway, which is now at Tatungfu, is expected to be pushed to Fengchen during the current year. Below is the estimate of receipts and disbursements of the Peking-Kalgan and the Kalgan-Suiyuan Railways for this year:—Revenue $3,775,000; and expenditure, including redemption of two short term loans, $3,114,000, thus showing a profit of $660,000, which is expected to be increased in 1916 to more than two million dollars.

Nanking-Honan Line.—A correspondent of the *China Post*, writing from Nanchang says:—

Surveyors for the Nanking-Honan Railway are starting surveys eastward to connect with Nanking. As near as can be learned, the local station of this road will be located near the Tehshen or north gate of the city not far from the station of the Kiukiang-Nanchang line, from there it will cross the Kan River and proceed westward to Changsha. Three English surveyors are in charge of as many sections of the survey between Nanchang and the Anhwei border. Construction trains are now in operation on the Nanchang-Kiukiang railway to a stream within one mile of the Kan River just opposite Nanchang. The report is that trains soon will be running regularly for passengers between Nanchang and Kiukiang. It will be necessary to cross two or three rivers by ferry, however, for a few months, as the bridges are not all completed.

Government Help Wanted.—The Kwong Tung Yueh Han Railway Co. is waving the flag of distress and calling upon the government to help them out of their financial troubles, says a South China contemporary. The shareholders, it seems, are not coming forward with their regular payments and the statement issued by the Company shows a big predominance of disbursements over receipts.

Canton-Hankow Railway.—Since the introduction of a reform measure in the administration of the Canton-Hankow Railway, the construction is being pushed rapidly and the section between Kwangchow or Canton and Wushih for 350 li is open to traffic. Work on a further section of 51 li is nearly completed. The tunnel near Tsingfengting will be wholly excavated during this month, although it is not quite one year since the work was started. On the section already open to traffic, business is proving satisfactory, one hundred passenger and goods cars being insufficient to accommodate the demand. It is understood that a large order was given to a certain foreign firm to furnish rolling stock. The districts through which the line is to pass abound in prosperous commercial towns. The railway, therefore, is expected to be a financial success when it is completed.

Ching-Han Railway Rolling Stock.—According to an investigation made by the Communications Department, rolling stock of the Peking-Hankow Railway totals 1,560 consisting of the following:—

Special cars, 29; Passenger cars, 108; Engines, 63; Sleeping cars, 14; Box cars for horses, 194; Trucks for coal, 325; Goods cars, 503; Trucks for stone, 388; Platform cars, 24; Tank cars, 3; Derrick cars, 3; Emergency cars, 6.

French Bank Denies.—Rumours spread in Hankow, that the Banque de l'Indo-Chine and the French Group are withdrawing their participation from the Hukuang Railway, as well as the Szechuan line are denied. The Hankow branch has been authorized to state that the French Group will continue to meet all its obligations and that it waives none of its rights and privileges as regards the above mentioned railways.—*Central China Post.*

Port of Pukow.—The Ministry of Finance has been instructed to provide means to meet the expenses for the construction of the Port of Pukow, all other preparations being now complete.

Wuchang Mint Road.—The light railway in Wuchang constructed by the Wuchang Mint was contracted with the Ho Hsing Company, but on account of the absence of Mr. Wen Ting-chang, Mint director, the cost was not paid. After a recent inspection by Mr. Wen, before giving over his duties to the new director Mr. Tsai, it was discovered that one bridge was not according to the specification. The contractors have been ordered to re-construct the bridge and part of the rail line before their account will be submitted to the Board of Finance for payment.

Nanking-Kiangsi Line.—It is learned that the building of the Nanking-Kiangsi Railway, which has been projected by the Government, will be started in the near future. A short time ago, says the *Peking Gazette*, the Director of the railway took with him certain funds from Peking to the South to start the work.

Iron Ring for Peking.—The Ministry of Communications has submitted a report to the President regarding the scheme of building a railway round the city wall of Peking. It may be summarised as follows:—

Soon after receiving the suggestion of building a railway from Hsichihmen, the Peking-Kalgan Railway Station, to Chienmen, the Peking-Hankow Railway Station, the Ministry ordered a survey. Engineer Kwong reported that the connection would cost $250,000 but that the benefit would greatly offset the small cost. The work was entrusted to the Peking-Kalgan Railway Administration which Administration now asks that the opening of the outer walls of the several gates be ordered so that the track may go through. Purchase of land, dredging of canals and other matters will be carried out with the assistance of the Ministry of Interior. Stations will be built at four of the gates. The actual cost is now estimated at $200,000. Presidential sanction has been given to the above scheme, and the construction work should begin very soon.

Light Rail in Tungshan.—There is a scheme on foot among Chinese in the Tungshan District to build light rail lines connecting Hsingking, Tunghua, and Hailungcheng, chiefly as carriers of produce in the so called granary of Manchuria.

Sungari Takes Bridges.—The thaw in the Sungari raised the river 10 feet, overflowing the banks near Chiuchan. Many houses and bridges were washed away, and a large number of cattle were lost. During the flood of the Itung River outside Changchun the bridge near South Gate was washed away. The bridge had been constructed by the Chinese Guild of the Railway Town of Changchun. The Guild learned that the bridge frame, while being carried downstream, had been intercepted by some Russians residing at Kwanchengtzu and been brought ashore.

Mukden Terminal Station.—The terminal station building of the Peking-Mukden Line of the Chinese Government Railways at Mukden is to be constructed on its present site outside West Gate. Architects are at Mukden, drawing the plan for the new building which will be very much after the design of the Peking terminal station.

S. Manchurian Traffic Returns.—Traffic returns for the last decade of March, marking the close of the last fiscal year, yielded the South Manchurian Railway Co. a daily average of Y83,654, being an increase on the corresponding period of last year by Y10,443.

This wound up the fiscal year just past with an increase of Y1,393,194, over the preceding fiscal year. The total increase in the traffic receipts for the produce season from December, 1914, to March last reached Y2,541,267.

The Manchuria Daily News reports the approval of the proposed loan of Y6,000,000 for making up the deficit in the Company's enterprise funds from the Tokyo Government. This loan will not be required probably before next autumn. Negotiations will be conducted to secure the best possible terms.

The estimated capital expenditures for the fiscal year of 1915, as sanctioned by the Government, amount roughly to Y 5,678,000, composed of the following:—

Railways, rolling stock workshops	Y1,957,000
Shipping	99,000
Electricity	209,000
Gas	84,000
Harbour and harbour works	1,119,000
Mining	1,456,000
Hotels	6,000
Land, Hospitals, schools, etc.	212,000
Railway Towns	244,000
Residences, and store-houses	292,000
	Y 5,678,000

Will Use Home Coal.—The Japanese Department of Communications has made coal contracts for 1915 with Japanese firms, but no foreign coal was rendered. The total tenders were 2,200,000 tons, valued at yen 11,000,000, of which Mitsui will supply 700,000 tons, Mitsubishi 400,000 tons, Hokkai Colliery 350,000 tons, Tokiwa 600,000 tons and Sumitomo, Furukawa and Yasukawa the remainder.

Anotsu Light Railway.—A charter has been granted to the Anotsu Railway Company for a light railway between Ando, Ano-gun, and Osato, Age-gun, Miye prefecture. The estimated cost is 50,000 yen.

Japan's Railway Earnings.—The official estimate of the working of the Imperial Government Railways for the year ending March 31, 1915, follows:—

Gross Revenue	Y122,143,886
Expenditures	103,761,543
Net Profit	Y 18,382,343

The official estimate for the year ending the 31st March, 1916, is:—

Gross Revenue	Y122,143,886
Expenditures	103,761,543
Net Profit	Y 18,382,343

The result of nine months working from April 1, to December 31, 1914, was:—

Gross Revenue	Y 88,124,435
Expenditures	77,586,850
Net Profit	Y 10,537,585

Four Tokaido Bridges.—Four big railway bridges along the Tokaido line are now under construction. Two bridges over the rivers Tenryo and Oi, are nearly completed, while one over the Nagara is expected to be open in two or three months while that one over the Fuji will be finished within the current year.

Tram Service on June 15.—The Imperial Railway Bureau has finally announced that the electric tramway service between Tokyo and Yokohama will recommence on June 15th.

Russian Railway Traffic.—According to the official report of the Russian Railway Department, the total lengh of railways in Russia extended in 1913 aggregated 62,200 versts (an increase of 1,286 versts compared with the previous year), and the number of passengers was 258,000,000, an increase of ten per cent. Passengers' hand-baggage and other luggage totalled 116,000,000 poods, while ordinary goods weighed 15,653,000,000 poods. The gross receipts were 1,162,000,000 roubles, an increase of slightly less than ten per cent, while expenses aggregated 587,000,000 roubles. The number of lines is 39, of which those in European Russia owned by the Government measure 33,178,000 versts in length, and whose average earning power is 18,850 roubles per verst. The total length of private lines is 18,991,000 versts, earning 17,888 roubles per verst. In Far Eastern Russia, the average receipt of government lines is 10,878 roubles per verst, and that of private railways 9,300 roubles per verst. The expenditure of the latter is much less than that of the former.

New Russian Railway.—The Russian Government has drawn a plan for the construction of a railway line through the southern regions of Siberia to connect the Black Sea with the Pacific Ocean. After the completion of this railway line, Russia will have two trunk lines linking European Russia with Siberia.

Russian Development.—The British Minister in Peking reports that the Amur Railway is to be pushed forward and the sum of 1,000,000 roubles (about £105,000) of Government funds will be expended in the current year on the Verkhneudinsk-Kiakhta Railway. According to the Harbin press, an inter-departmental conference has been held in the Department of Railway Affairs at Petrograd to consider the extension to Urga of the projected railway from Verkhneudinsk to Kiakhta. It is understood that the decision was affirmative. The reasons are to be found in the altered economic position of Russia in Mongolia and the Far East. The fall of the German fortress of Tsingtao and the expulsion of German trade from almost all the Far Eastern ports furnishes Russian industry and trade with an abundant opportunity to acquire various markets in China.

To secure a closer connection between Russia, Japan and China, it is proposed to organise a Sino-Russia-Japanese company, the principal object of which will be the co-ordination of the contemplated reciprocal commercial relations between these three countries. The inter-departmental conference above referred to also considered the question of the delimitation of the spheres of economic influence of Russia and Japan and came to the conclusion that such a delimitation is capable of realisation. The same conclusion has been reached on the Japanese side. In a further extract from the Harbin press it is stated that the Russian Government has granted to the Siberian Trading Bank the right to issue in Mongolia money coined in the Russian mint. On one side of the coins the value will be impressed in the Russian language and a corresponding impression in Mongolian will be made on the reverse side. For exchange purposes the money will be equal to the Russian rouble (par value, 2s. 1½d.) This new money, which it was intended to bring into use in March will be the legal tender of Mongolia. A monetary reform of this kind, its initiators and the Mongolian Government say, will regularise financial dealings in Mongolia and destroy the influence which Germany has acquired by means of its Hamburg silver.

Manila R. R. to make Guarantee.—In connection with the litigation between the Tayabas Land Company and the Manila Railroad relative to deposit previously required as a guarantee for lands expropriated, Judge Paredes has reaffirmed his decision requiring the company to deposit P 1,000,000.

Meantime Board of public utilities commissioners is continuing its investigations into the Tayabas transactions, as to relations existing between the Tayabas land company and the Philippine estates development company. If it is found that the former is a branch of the development corporation, proceedings will be brought against the latter, which, by its articles of incorporation, is prohibited from dealing in lands.

F. M. S. Offices Moved—The construction head offices of the Federated Malay States Railway have been removed from Seremban, and permanently located in Kuala Lumpur. All communications should be addressed to the Chief Resident Engineer for Constructions, F.M.S. Railways, Kuala Lumpur.

Burma Railway Hotel.—The Burma Railways Company proposes to build a hotel at Kalaw and, in the meantime, is preparing to make temporary arrangements for visitors.

All Steel Cars in India.—All-steel cars are being experimented with on several railway lines in India. Others lines probably will await the results of lines that now have the matter under consideration. Metal freight cars have long been in use in India, but passenger cars are usually built of teak-wood resting on steel underframes. This wood formerly was cheap but with the rise in price of teak and the cheapening of steel the use of the latter has become possible.

The Railway Board of India has issued instructions to install electric lighting in all carriages on State-worked railway systems. The general adoption of electric lighting has now been decided on.

Emden Stimulates Railway.—The Emden's exploits are now a thing of the past, but the inconvenience they caused brought into renewed prominence the project for constructing a railway between India and Burma, Rangoon having been practically cut off from the Bengal coast during the raids of the German cruiser. Now the Government has taken the matter up, and a survey is being made. The most probable route would be along the coast, the start being made from Chittagong, the terminus of the Assam-Bengal railway, and then running southwards through the rice fields to the Indo-Burmese frontier, thence for 160 miles to the harbour of Kaukkphu. This line would cost about £7,000,000. Another proposed route is *via* Manipur, which would cost about £5,000,000; and a third is *via* the Hukong Valley, this being the cheapest, the cost being estimated at only £3,500,000, but the line would run through a very thinly-populated country, whereas the Chittagong-Kaukkphu route would pass through a district already possessing a big trade.

Indian Railway Budget.—With an anticipated surplus of £1,256,000 converted into a deficit of £2,741,000 in the Indian Budget for 1914-15, an anticipated deficit in the year 1915-16 of £2,770,000, accompanied by the inevitable stringency of the money market resulting from war conditions, it was only to be expected that there would be a reduction in the allotment for capital works on Indian Railways in the coming year but the press questions whether the reduction from £12,000,000 to £8,000,000 is not going too far. In normal times equipment has been so far below the necessities of trade that the temporary set back in transport demands might have proved a blessing in disguise. Lord Hardinge's remarks at the opening of the Lower Ganges Bridge appear to indicate an early allotment of funds for a Bengal-Burma connection railway, a project which will inevitably prove a big 'money eater,' without much promise of direct return on the outlay, as in the case of the Assam-Bengal Railway.

The Indian Railway Board have sanctioned a survey by the Assam-Bengal Railway Administration for the following lines of railway on the metre gauge:—

From Karimganj into the Longi Valley to Hathikhera with a branch into the Chargola Valley, 44 miles, and from Silchar to Dwarbund with branches to Sonaimukh and Dhalai, 30 miles. This survey will be known as the Assam Feeder Railways Survey and both feeder lines will tap rich tea districts.

A detailed survey is being carried out by the agency of the Darjeeling-Himalayan Railway Extensions Company, for a line of railway from Thakurgunge to Sikti, 44 miles.

A detailed survey will be carried out by the South Indian Railway Administration for a line of railway on the 2 feet 6 inches gauge from Krishnagiri on the Tirupattur-Krishnagiri Railway to Royakota on the Morappur-Hosur Railway, 14 miles.

The Board also has sanctioned the construction, by the South Indian Railway, of a branch line, metre gauge, from Tiruttuaipundi, a station on the South Indian Railway,

Exchange of Notes Respecting the Terms of Lease of Port Arthur and Dalny and the Terms of South Manchurian and Antung-Mukden Railways

Peking, the 25th day of the 5th month of the 4th year of the Republic of China.

Monsieur le Ministre,

I have the honour to state that, respecting the provisions contained in Article I of the Treaty relating to South Manchuria and Eastern Inner Mongolia, signed this day, the term of lease of Port Arthur and Dalny shall expire in the 86th year of the Republic or 1997. The date for restoring the South Manchuria Railway to China shall fall due in the 91st year of the Republic or 2002. Article 12 in the original South Manchurian Railway Agreement providing that it may be redeemed by China after 36 years from the day on which the traffic is opened is hereby cancelled. The term of the Antung-Mukden Railway shall expire in the 96th year of the Republic or 2007.

I avail, etc.,
(Signed) LOU TSENG-TSIANG.

His Excellency,
Hioki Eki,
Japanese Minister.

Reply

Peking, the 25th day of the 5th month of the 4th year of Taisho.

Excellency,

I have the honour to acknowledge the receipt of Your Excellency's note of this day's date in which you stated that "respecting the provisions contained in Article I of the Treaty relating to South Manchuria and Eastern Inner Mongolia, signed this day, the term of lease of Port Arthur and Dalny shall expire in the 86th year of the Republic or 1997. The date for restoring the South Manchurian Railway to China shall fall due in the 91st year of the Republic or 2002. Article 12 in the original South Manchurian Railway Agreement providing that it may be redeemed by China after 36 years from the day on which the traffic is opened, is hereby cancelled. The term of the Antung-Mukden Railway shall expire in the 96th year of the Republic or 2007."

In reply I beg to state that I have taken note of the same.

I avail, etc.,
(Signed) HIOKI EKI.

His Excellency,
Lou Tseng-tsiang,
Minister of Foreign Affairs.

Exchange of Notes Respecting the Opening of Ports in Eastern Inner Mongolia

Peking, the 25th day of the 5th month of the 4th year of the Republic of China.

Monsieur le Ministre,

I have the honour to state that the places which ought to be opened as Commercial Ports by China herself, as provided in Article 6 of the Treaty respecting South Manchuria and Eastern Inner Mongolia signed this day, will be selected, and the regulations therefor will be drawn up, by the Chinese Government itself, a decision concerning which will be made after consulting the Minister of Japan.

I avail, etc.,
(Signed) LOU TSENG-TSIANG.

His Excellency,
Hioki Eki,
Japanese Minister.

Reply

Peking, the 25th day of the 5th month of the 4th year of Taisho.

Excellency,

I have the honour to acknowledge the receipt of Your Excellency's note of this day's date in which you stated "that the places which ought to be opened as Commercial Ports by China herself, as provided in Article 6 of the Treaty respecting South Manchuria and Eastern Inner Mongolia signed this day, will be selected, and the regulations therefor, will be drawn up, by the Chinese Government itself, a decision concerning which will be made after consulting the Minister of Japan."

In reply, I beg to state that I have taken note of the same.

I avail, etc.,
(Signed) HIOKI EKI.

His Excellency,
Lou Tseng-tsiang,
Minister of Foreign Affairs.

South Manchuria

Peking, the 25th day of the 5th month of the 4th year of the Republic of China.

Monsieur le Ministre,

I have the honour to state that Japanese subjects shall, as soon as possible, investigate and select mines in the mining areas in South Manchuria specified hereinunder, except those being prospected for or worked, and the Chinese Government will then permit them to prospect or work the same; but before the Mining regulations are definitely settled, the practice at present in force shall be followed.

Fengtien.

Locality	District	Mineral
Niu Hsin T'ai	Pen-hsi	Coal
Tien Shih Fu Kou	„	„
Sha Sung Kang	Hai-lung	„
T'ieh Ch'ang	Tung-hua	„
Nuan Ti T'ang	Chin	„
An Shan Chan region	From Liaoyang to Pen-hsi	Iron
Kirin (Southern portion)		
Sha Sung Kang	Ho-lung	Coal & Iron
Kang Yao	Chi-lin (Kirin)	Coal
Chia P'i Kou	Hua-tien	Gold

I avail, etc.,
(Signed) LOU TSENG-TSIANG.

His Excellency,
Hioki Eki,
Japanese Minister.

Reply

Peking, the 25th day of the 5th Month of the 4th Year of Taisho.

Excellency,

I have the honour to acknowledge the receipt of Your Excellency's note of this day respecting the opening of mines in South Manchuria, stating: "Japanese subjects shall, as soon as possible, investigate and select mines in the mining areas in South Manchuria specified hereinunder, except those being prospected for or worked, and the Chinese Government will then permit them to prospect or work the same; but before the Mining regulations are definitely settled, the practice at present in force shall be followed.

Fengtien.

Locality	District	Mineral
Niu Hsin T'ai	Pen-hsi	Coal
Tien Shih Fu Kou	„	„
Sha Sung Kang	Hai-lung	„
T'ieh Ch'ang	Tung-hua	„
Nuan Ti T'ang	Chin	„
An Shan Chan region	From Liaoyang to Penhsi	Iron
Kirin (southern portion)		
Sha Sung Kang	Ho-lung	Coal & Iron
Kang Yao	Chi-lin (Kirin)	Coal
Chia P'i Kou	Hua-tien	Gold.

I avail, etc.,
(Signed) HIOKI EKI.

His Excellency,
Lou Tseng-tsiang,
Minister of Foreign Affairs of the Republic of China.

Volume XII

(Comment) This volume has less pages per month compared with earlier issues, down from an average of 40+ to 30+ pages with fewer photographs and also fewer articles on engineering topics. It is very heavy on long editorials about Chinese politics and foreign rivalry for dominance in various regions of China.

June 1915
Salt Manufacture in Newchwang 2 pictures of loading salt onto railway wagons.
Uniform Accounts for China's Railways. The Ministry was taking steps to introduce their new accounting system on all Chinese railways.
financial results for the peak came to hand power line for the years 19 0 9 to 1913 stock
Official Changes in Peking . The managing director of Tientsin-Pukow Railway had been removed from office and was to be charged with corruption.
The Peking-Kalgan-Tatung Rly. A summary of a report about this new line by Director of Engineering ,Shen Chi. 1 sketch map & 6 photos . Also report about Kalgan-Seiyuan (Suiyuan) Railway.
Chefoo-Weihsien Railway. Permission granted to build this as a semi government enterprise. China Paying Railway Loan . A 1/2 yearly repayment had been made in respect of the Peking to Hankow Railway loan.

July 1915
Progress of China's Railways. Sweeping changes had been made to the management of China's railways. Report includes the financial results for the Peking-Hankow Line for the years 1909 to 1913 .
Improvements at Peking at Chien-men A report describing how parts up the city towers' curtain walls were to be removed to facilitate construction of new roads and a round-city railway line. 8 photos 3 sketches and 1 sketch-map .
South Manchurian Railway Accounts for the year ended March 31st 1915.
Conditions in Shantung The Japanese-captured lines had all been repaired.
New Line in Manchuria A line from Supingchia to Tsengchiatung is to be constructed.
Want to Buy Cranes . CER had requested quotes for the supply of steam locomotive cranes from USA .
Hankow-Ichang Bridge Tenders had been called for 4 steel railway bridges .
Canton-Hankow Railway. Their head offices had been moved to outside Wuchang .

August 1915
Need of an Inspectorate-General of Railways. President Yuan Shi Kai had issued a mandate for the reform of China's railways to overcome "mismanagement"
China's Railway Accounts American expert Dr. Adam's reortedly returning to Peking to continue the excellent work of the account's reform committee .
Railway Construction and the War Work on railway construction had come to a halt over financing problems. The Kaifeng-Hsuchow & Pukow-Sinyang lines are highlighted in the report.
Chinese Eastern Railway Car Shortage . A shortage of wagons was holding up shipments of wheat etc. to the port.
Chefoo-Weihsien Line The estimated cost of this railway would be 10 million taels without including a branch line to Lungkow.

British Railway Concessions . The British Foreign office had reported that no agreement had been reached over future development of British-built lines in China.
Shantung Railway Repairs. The repair work on this railway had now been completed.
Chinghsien-Dolanor Line A Consular report stated the Chinese government was planning to construct this railway,
Railway to Yunnan Mines .Plans for the Kochiu tin mine railway from Mengtze were nearing fruition.
Canton Kowloon Railway The annual report of the British Section suggested that the increase in traffic on the railway required additional locomotives and rolling stock plus necessary accommodation for these at Hunghom.
Canton-Hankow Railway The line had almost been completed as far as Shiu Kwan (Shaoguan) , 140 miles from Canton. The last 20 miles had been delayed 2 years because of heavy rock cuts and tunnels.
Chinese Railway Mileages. A list of mileages of China's longest railways.
South Manchurian Railway Material. A consular report summarizing the list of foreign equipment purchases made by the railway In 1913 and 1914.
South Manchuria Railway Doubles Track. Permission had been granted for double tracking the Suchiatun-Mukden section of the main line.
South Manchurian Railway Traffic Returns For the first time traffic had shown a decrease since the previous year.

September 1915

Kowloon Canton Railway (British Section) 5-page text of the Annual Report for the year 1914, by H. P. Winslow, Manager . 4 small photos and a list of the financial figures.
Canton-Hankow Railway - Hupei-Hunsan Section Tenders had been called for the supply of steel bridgework.
The Changchun-Kirin Railway and its Strategic Meaning A history of the line and the politics involved, including the agreement between the Chinese and Japanese and also about Russian criticism.
Hankow-Canton Line. A letter from an American engineer employed in surveying this line, written to the American consul in Hong Kong explaining why work on the line would soon halt.
Chinese Eastern Railway Forts The Russian government had decided to build redoubts at Changchun and other places along the line.
Nanchang-Kiukiang Loan. The loans on this line had not been repaid and the Japanese wished to secure control of the financial department as a security for the repayment of loans.
South Manchurian Railway Traffic Returns . Financial figures for the month of August 1915.

October 1915

Commerce and Industry of Formosa 4 photos of railway scenes at 'Kohehiro' sugar mill and Imperial Taiwan Railways 'Daihoku' (Taipei) & 'Rurun' (Keelung) stations.
Tsitsihar-Aigun Railway. Construction would begin the next spring.
South Manchurian Railway Traffic Returns .Figures for the month of October.
Ninguta-Mulin Railway Construction of this line had been pending for some time and was still under discussion
New Tsingtau-Shanghai Service The SMR had started a shipping service between these ports in October using the “Hakushin Maru”

November 1915

Shasi-Singyi Railway A report that surveyers has concluded the survey and

the route would extend 655 miles. List of cities it would pass through.
Shantung Line Makes Money Monthly income had increased to 200,000 Yen since the Japanese had taken control.
Kirin-Changchun Railway A description and report on the situation of the line reported at the time the Japanese were given control by the Chinese.

December 1915
Kiukiang Railway Construction Report on the construction status. There was still no bridge across the river near Nanchang.
Nanking-Hunan Railway Surveying had commenced at the Kiangsi end.
Lung-Ching-U-Hai Railway Report that part of the line's construction was proceeding in spite of a lack of loan funds.
Change of Terminus The proposed Pukow-Shenyang line had now become the Pukow-Kuachow line due to gentry requests.
U.S. Cars for Kwangtung Yueh-Han Railway The railway was equipping itself with American cars and wagons and rejecting British designs.
Liaotung Light Rail Lines Report that a franchise had been awarded for the first 26-mile line being from Pulantien (Pulandian 普兰店) to Pitsuwo.
South Manchuria Railway Needs Estimates for the next financial year.
Ssupingkai Line Report on the new loan agreement for this proposed line to Chengchiatun (Zhengjiatun).
Bahmo-Tengyueh Railway 18 years after an agreement had been signed to investigate the feasilibilty of this line, the plan was still not going anywhere.

January 1916
Likin on the Tientsin-Pukow Railway After the abolition of Likin stations on this railway line in 1913, the stations had been reintroduced and freight traffic had thus reduced, diverting to Tsinanfu.
300 Cars for Peking-Mukden Railway Increased traffic had led to a recommendation for additional rolling stock.
Taokou-Chinghua Earnings Freight carried had increased about 12% in1914.
S.M.Ry. and Russian Coaches A contract had been agreed for the SMR's Dairen works to supply 1509 (0- misprint ?) carriages at a cost of ¥30 million.
Szepingchieh Line Agreement The Yokohama Specie Bank was to proide a $3.4 million loan for building the line to Chiengchiatung (Zhengjiatun)
Taonan-Urga Line A lack of funds was delaying the building of this line to Outer-Mongolia.
Railway Construction in Chekiang Report that progress was very slow.
Shantung Railway Traffic on this line had increased since Japan took control from the Germans.
Chefoo-Weihsien Railway An agreement had been reached between the government and Chefoo merchants to build this line as a joint venture.
New Chinese lines The Ministry had decided to construct several new lines during 1916.
S.M.Ry. Plans Steel Works The railway company planned to build a steel plant using material from the mines in the railway zone.

February 1916
A New Railway in Inner Mongolia a one-page description and comments about the proposed Szepingchieh-Chengchiatung Railway.
Inner Mongolian Survey The survey for a new line between Cinchow and Dolonor was making progress.
Kirin-Changchun Railway Loan negotiations were continuing.
S. Manchurian and Shantung Railway Agreement A through traffic service agreement had been signed.

March 1916
The Pingsiang Colliery A 6-page illustrated account of the opening of this coal mine and the difficulties faced. Almost exclusively about the mine and not the railway, but one small picture of the loading of railway coal wagons.
China's Railways in 1915 An accessment of the financial situation for railways during 1915. Includes a set of earnings figures for 15 lines.
Taiwan (Formosa) and Its Exposition A report about a planned exposition to show the world the advances made on the island isince Japanese control. Several small photos of railway wagons at wharves in Keelung and railway bridges .
Canton-Hankow Railway Construction work was continuing despite the war.
Peking-Jehol Railway Construction was to be divided into three sections.
Hangchow-Hweichow Project Efforts were being made to revive this stalled project.
Chefoo-Weihsien Railway Report that finances had been arranged and construction would be begin in May.
Kaifeng-Honan Line Construction was making progress.
S.M.R Traffic Returns Financial figures for February.

April 1916
New Railways in North Manchuria Five-page indepth report on new railway development north of Tsitsihar (Qiqiha'er) and Harbin to Mergen and Aigun by the Russians. 19 photos and 1 small sketch map.
Transportation in China Extract from an address by Mr Sidney Powell to the Engineering Society of China.
S.M.Ry. Traffic Returns Returns for March and a comparison of figures for 1913.
Shantung Railway Returns February Earnings.
Canton-Wuchang Line Work was proceeding. Workmens' trains had resach Sienlin
Canton-Hankow Railway Bridges A contract for building the bridges had been awarded to Jardine Matheson & Co and the Yangtze Engineering works.

May 1916
Chinese Eastern Railway Returns Financial figures for the year 1915.
South Manchuria Railway Estimates Projected figures for the forthcoming year, followed by actual Returns for the month of April.
Shanghai-Hangchow Railway Political problems had stopped traffic on 21 miles of the line straddling the provincial border.
Russo-Japanese Through Traffic Conference Agreements had been reached for through traffic on their respective lines through Chinese territory.
Shanghai to Hankow by Rail Through trains were now running from Hsuchow to Chengchow facillitated by the opening of Hsuchow-Kaifeng section of the Lung-Hai Railway.

Weighing and Bagging

sun-evaporated salt, except in Yunnan where the importation of salt, even Chinese, by railway is prohibited. It is impossible to obtain statistics as to the relative quantities of sea, "boiled" and "board" salt consumed in China, but in view of the fact that sea-salt has no access to Yunnan and Szechuen, which together have a population of, say, 50 million—one-eighth of that of China—the sea-salt consumed cannot be more than, say, 85% of the whole.

There can be no doubt that, in view of the fact that railways are being built from the sea inland, and are not facilitating transport from the "boiled" salt district, the area consuming sea-salt is, and is likely to be, on the increase.

It is stated by Chinese in Chihli that Chinese throughout China prefer salt prepared from brine by sun-evaporation. This salt is usually cleaner before contamination or adulteration than any other, is very salt in taste, and is free from bitterness. So high is this reputation that in South Yunnan, two hundred miles from the sea, smuggled sea-salt is preferred to the clean well-salt of Western Yunnan, more on account of its superior saltness and preserving properties than on account of its greater cheapness. On account of the well-known superiority and ready saleability, salt merchants through those parts of China into which sea-salt can be imported, prefer to deal in this kind of salt.

Next in quality, according to Chinese estimation, is the salt made by "boiling" or evaporation in iron pans over fires.

Third in estimation comes the salt prepared by evaporating brine on boards.

The following is therefore the order of preference:—(1.) Sea-salt, (2.) Boiled-salt, (3.) Board-evaporated salt.

Refined salt Consumption.—The Chinese merchants in Tientsin refine a small quantity of sea-salt by re-solution followed by careful filtration. This salt is for foreign consumption, and is sold to foreign merchants by the salt-guild at a price of 18 cents per catty at Tientsin. The consumption of this "refined" salt is quite inconsiderable. It is probable that were the price of this refined salt to be brought to a figure approximating that of the common quality, by manufacturing by machinery and on a much larger scale, a considerable period would elapse before Chinese and European demand, together, for the improved brand, would enable this plant for the manufacture of refined salt to be kept continuously in operation by the demand.

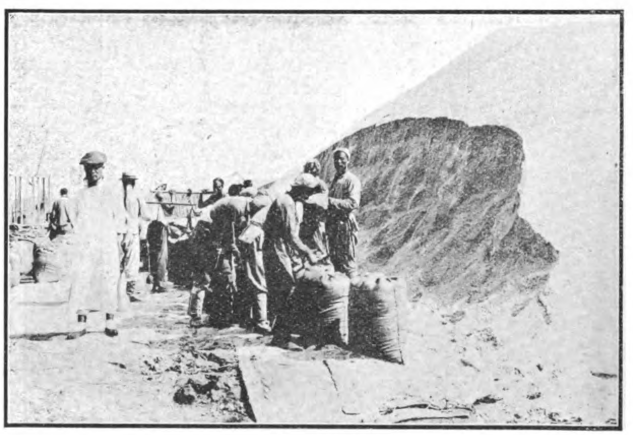
Weighing, Bagging and Sealing

The existence of the small quantity of native refined salt mentioned above is due not to the small profit to be made in open market upon the sale of the small quantities consumed, so much as to the fact that foreign salt is, by treaty, contraband in China.

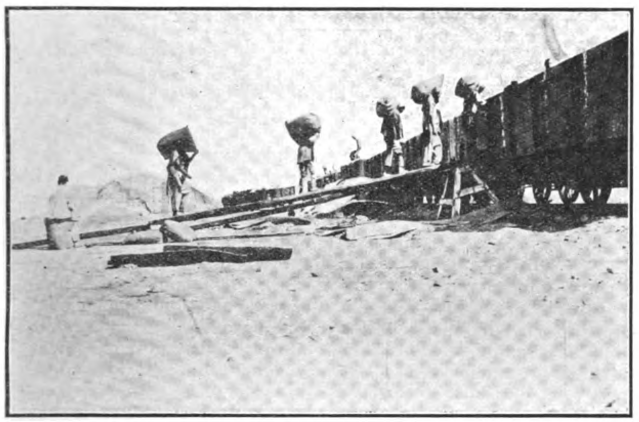
Salt Manufacture in the Newchwang District of Manchuria.*

In the low-lying lands of the Liao-tung Peninsula, and more especially between the port of Newchwang and the city of Kai-p'ing Hsien, where a number of creeks penetrate inland from the sea, much of the ground is given up to the manufacture of salt by sun evaporation. Previous to visiting these salt-fields I was under the impression that sea-water was simply run on to the fields and allowed to stand there until the water dried up and left a deposit of salt; but I found on personal examination that the process is much more elaborate and is carried on not without a certain amount of rude science. Nearest to the creek or open ditch leading from the creek—these ditches ramify over the salt-fields—are five large square or oblong plots of land (Shui Chuan) sunk in the soil, each carefully dyked and capable of containing water two to three feet deep. Small openings, which can readily be closed by pieces of wood, allow the water to run from the first plot or tank into which the sea-water is baled from the creek or ditch to the second, third, fourth and fifth tanks. Next to these tanks are eight similar but smaller tanks (Lu Tang), and beyond six and sometimes eight similar but smaller tanks (Yen Chih), in the last of which the salt ultimately crystallises. The three sets of tanks all communicate with each other by means of small openings in the dykes, which can be closed at will. In the first two sets of tanks the beds or floors are flat, but in the last set, which are shallower, they rise gradually from edge to centre. In the end of the autumn the beds of the last set of tanks (Yen Chih) are beaten hard by wooden mallets—the soil is clay—and sea-water is run into them through the other sets of tanks. That is allowed to remain frozen over winter, and in spring the beds of the Shui Chuan and Lu Tang are levelled and beaten hard. When the water thaws in the Yen Chih it is carried back by a small drain to, and stored in, the third and

*Sir Alexander Hosie:, 'Manchuria." 1901. Methuen.



Sewing up the Bags



Loading into Trucks

Trainload of Salt

fourth of the Lu Tang or middle set of tanks. This water is now called the Lao lu or old brine, and the workmen contend that crystallisation is hastened by the sea-water passing through it from the Shui Chuan on its way to the Yan Chih. When the old brine is removed from the latter the beds are again hardened. Everything is now in order for the manufacture of salt. The Shui Chuan are ready for the reception of sea-water from the creek, the third and fourth tanks of the Lu Tang are full of Lao lu (old brine), the other six being empty, and the Yen Chih are also empty. When the Shui Chuan are full the water at once passes on to the Lu Tang, mingles with the Lao lu, and remains there eight days. Science now steps in. The headman has to say when the time has arrived to allow the water to pass through the last Lu Tang to the final set of tanks (Yen Chih), i.e. to test its specific gravity. This he does by using the egg-shaped seeds of the lotus. It was only after an hour's cross-questioning—the Chinese mind works in a series of curves—that a headman produced from a small bag hung round his neck by a cord under his clothes, four lotus seeds of different colours and weights. They represented, according to him, thirty, fifty, eighty and a hundred per cent, and when the heaviest, that is the last, floated on the surface of the water, the time had come to allow the water to escape from the Lu Tang into the final set of evaporation tanks (Yen Chih). Not all, however, for as Lao lu (old brine) must be retained in the Lu Tang for the next supply of sea-water, only one half is permitted to flow into the Yen Chih. Much now depends upon the weather. In the hottest and brightest days of summer salt crystallises in the final tank in forty-eight hours; but three to four days are usually required in spring and autumn. Ten to fourteen days, therefore, may be reckoned as the time necessary to complete the manufacture from the time the sea-water enters the Shui Chuan till the salt falls in large crystals on the bed of the final tank, whence it is scooped up by means of a wooden rake and spread out to dry. When it has been collected the water from the next tank takes its place, and so the process goes on. The crystals are large—some clear as glass, others white and opaque, while others again are dingy and muddy. The purity of the salt depends, in a great measure, on the hardness of the bed in the final tank. If it is at all soft, mud is scooped up with and discolours the salt. On an average five piculs (a picul of salt weighs about 600 catties or 800 lbs.) are collected from the final tank at one time, and the average production of a set of tanks for seven months' working amounts to 300 piculs (of 800 lbs. each) or 107⅛ tons. Much however depends upon the season: dull or rainy weather retards the evaporation. The price of salt at the works is from 12 to 13 tiao (roughly speaking, 6 tiao are equal to 1 Mexican dollar) per picul (800 lb.) and the tax per picul of the same quantity payable by the buyer at the Salt Collectorate Office near at hand amounts to 7½ tiao, or more than 50 per cent ad valorem. The cartage per picul from the place of production to the port of Newchwang is 4 tiao, bringing the price per picul at the time of shipment for the interior of Manchuria up to 24 or 25 tiao, or about 4 dollars. To avoid this cartage, boats which have come down from the interior with beans frequently ascend the creeks, load a little salt and return to the port to fill up with return cargo. The shallowness of the creeks prevents their taking full cargoes at the works.

Appendix 1.

Localities of Salt-Production in China.

1. *Sun-dried Salt:—*
   - A. From sea-brine (coastal)
     1. Sheng-ching, or Newchwang, district of Manchuria.
     2. Chang-lu district (Chihli province), as in this report.
     3. Shantung.
     4. Huai-pei (Northern Huai, in Kiangsu).
     5. Fukien and Kuangtung.
   - B. From well or lake salt (inland)
     6. Shansi
        Shensi
        Mongolia
        Sinkiang
2. *"Boiled" salt (inland)*
   1. Szechuen
   2. Yunnan
3. *"Board evaporated" or "boiled" (coastal)*
   1. Huai-nan (South Huai in Kiangsu)
   2. Chekiang

Appendix 2.

Atmospheric Conditions at Tientsin.

Total Rain and Snow Fall from the year 1908 to 1912.

	1908 Inches	1909 Inches	1910 Inches	1911 Inches	1912 Inches
January	.21	.04	...	.98	...
February	.25	.06	...	.04	.04
March	...	.54	.43	1.02	...
April	.20	.03	.14	.96	.26
May	1.28	.65	.80	.27	4.73
June	.67	1.83	2.77	2.95	1.57
July	4.99	3.34	8.37	6.25	11.40
August	12.72	7.12	4.02	7.64	8.05
September	4.71	.49	.75	4.24	4.58
October	1.08	.55	.22	.32	.55
November	.19	...	.31	.96	...
December	...	...	...	.08	.14
Total	26.30	14.05	17.81	25.71	31.32

Maximum and Minimum Temperatures from 1909 to 1912.

	1909 Degrees		1910 Degrees		1911 Degrees		1912 Degrees	
	Max	Min	Max	Min	Max	Min	Max	Min
January	45.0	2.0	29.0	3.0	41.0	—2.0	46.0	8.0
February	51.0	12.0	52.0	2.0	47.0	—4.0	54.0	10.0
March	69.0	15.0	69.0	17.0	64.0	25.0	67.0	20.0
April	87.0	28.0	87.0	28.0	86.0	33.0	85.0	9.0
May	107.0	41.0	87.0	40.0	92.0	44.0	94.0	46.0
June	96.0	55.0	101.0	53.0	94.0	55.0	100.0	60.0
July	105.0	64.0	103.0	64.0	92.0	64.0	100.0	61.0
August	94.0	65.0	93.0	66.0	96.0	66.0	98.0	65.0
September	89.0	50.0	88.0	48.0	90.0	57.0	85.0	52.0
October	84.0	32.0	80.0	40.0	73.0	36.0	80.0	35.0
November	69.0	17.0	69.0	14.0	64.0	8.0	60.0	18.0
December	49.0	7.0	43.0	6.0	43.0	9.0	42.0	4.0
For Year	107.0	2.0	103.0	2.0	96.0	—4.0	100.0	4.0

UNIFORM ACCOUNTS FOR CHINA'S RAILWAYS

Steps have been taken by the Minister of Communications at Peking, Mr. Liang Tun-yen, to have the accounting systems devised by the Unification of Accounts Commission introduced on the various Chinese railways. In accordance with this decision the Minister of Communications has issued instructions to the various railways as follow:—

It is hereby notified that hereafter Inspectors of Accounts will be sent by this Ministry to the different railways from time to time to examine the accounts and to keep in close touch with the accounting work of the different railways. On the arrival of such Inspectors the Railway officials are hereby ordered to furnish them with all necessary information and to assist them in making their examinations.

Although monthly statements and annual reports are now sent by the different railways to this Ministry for audit and approval, such statements and reports only represent the summarized results of the transactions taking place during the periods concerned. It is impossible for such statements and reports to contain the detailed items and to show definitely the circumstances under which the transactions were made. This Ministry, therefore, deems it necessary to appoint and despatch inspectors of accounts from time to time in order to ascertain whether the accounts check with the vouchers, whether the funds are properly expended and whether the methods of entry are adequate and satisfactory. With regard to other problems in relation to accounting it is also deemed necessary that such inspectors be despatched to make proper inquiries so that misunderstandings may be avoided and progress made. As the mileage of railways will increase and railway problems tend to become more complicated from year to year, and as many of the lines will be far away from Peking, such inspection will be more indispensable as time goes on.

According to former practices, antiquated reports were translated and rendered, these being considered adequate to represent the original accounts; and unless protests were made or special inquiries held where fraud was suspected, actual investigation was scarcely resorted to. Therefore the appointment of inspectors often aroused suspicion and antagonism and created unfavourable comment and uneasiness.

But it should be understood hereafter that the inspection of the accounts of your railways is not inspired by any suspicion of irregularities but is undertaken purely as a part of the regular routine of railway administration. In ordinary business administration, the shareholders of a company or corporation elect or appoint certified public accountants as a matter of course to inspect and audit the books of the company. In foreign countries the accounts even of private railways are subject to inspection by Government inspectors as well as by those appointed by shareholders. Moreover, if the accounting system of a railway is adequate and operating satisfactorily, or if the traffic service of a railway is making progress, its merits will be disclosed and made known better through the testimony of the inspectors.

It is therefore ordered that the different railway administrations should furnish the inspectors of accounts with all necessary information and give due assistance.

OFFICIAL CHANGES IN PEKING.

Several official changes have taken place in Peking during the month. Mr. Chang-hu, co-Director of the Central Salt Administration, has been removed from office and has been replaced by Mr. Kung Hsin-chan, a native of Anhui Province. Mr. Yih Kung-cho, Vice-Minister of Communications, has been removed and his work is being taken over by Dr. George Mark, co-Vice-Minister of Communications. Mr. Chao Ching-hua, Managing Director of the Tientsin-Pukow Railway, has also been removed. All of these officials are to be tried on charges of corruption.

RIVER CONSERVANCY IN KWANGTUNG PROVINCE

Translation of the Report of the Director-General of the Bureau of River Conservancy in Kwangtung

The Bureau of River Conservancy of Kwangtung Province has been organized by a Presidential Mandate, and Mr. Tan Hseh-hung has been appointed Director-General to take charge of the conservancy work. For a preliminary inspection of the water courses, the temporary service of Mr. Hugo von Heidenstam, Chief Engineer of the Huangpu Conservancy Works, has been secured, as was publicly announced on January 1. Mr. Heidenstam arrived in Canton on January 30, and started on February 2nd with Director-General Tan for a reconnaissance of the rivers as far as Yow Tsa Tan, above Wuchow, on the Si Kiang; Lan Kang Wei, on the Pei Kiang; and Ta Tun on the Tung Kiang. Careful examinations have also been made of the important tributaries of the above named rivers, which included the trip to examine the elevation of the land between Hsin Hsing and Kai Ping with a view to ascertaining the possibility of excavating a new outlet to the sea. Extensive investigation has been made throughout the trip concerning the causes of floods, by gathering information from the Maritime Customs authorities and by taking instrumental records with regard to the rainfall, discharge of water, velocity of current, and the width and depth of the rivers.

Director-General Tan and Mr. Heidenstam returned to Canton on Feb. 11, when Mr Heidenstam had to return to Shanghai owing to the urgent engineering works of the Huangpu Conservancy. He left for Shanghai on Feb. 19. As a result of the reconnaissance trip, Mr. Heidenstam has expressed the opinion that a year's time will be required to make a careful survey examination of the important rivers and determine the methods of building the dikes, from which complete detailed maps have to be prepared. Then, with the data thus obtained, proper construction plans can be determined. The survey work must precede the actual construction work, without which it is impossible to determine the construction plans and to estimate the construction expenditures. Mr. Heidenstam has therefore drafted a general plan for the survey work and has recommended a Swedish engineer to be the engineer and surveyor of the Kwangtung River Conservancy Bureau, which has been approved by Director-General Tan. Mr. Heidenstam advised that the engineer should proceed to make an examination of the rivers, and, when that is completed, go to Shanghai to study the Huangpu Conservancy Works and have a personal discussion with Mr. Heidenstam. The engineer assumed his duty on March 1, and on March 3, he started with Director-General Tan for another reconnaissance trip of the rivers, following the same routes as were taken on the first trip. It happened then that the water along the routes was at its lowest level, for which many water marks have been established on the rivers as a basis of comparison with the survey records. The Engineer and Director-General Tan returned on March 11, and the Engineer left for Shanghai on the same day.

The general plan of survey drawn up by Mr. Heidenstam, agreed to by the Engineer, and approved by Director-General Tan, comprises seven parts, which will be carried out with organized survey parties as soon as the Engineer returns from Shanghai. The survey work on the Si Kiang from Mo Tao Men to Wuchow, is divided as follows:

THE PEKING-KALGAN-TATUNG RAILWAY

REPORT OF OFFICIAL INSPECTION TRIP

The following is a summary of the Report on the Inspection of the Kalgan-Tatung Railway, by Shen Chi, Director of the Department of Railway Engineering in Peking:

In accordance with orders I set out for Kalgan on the 6th of February with Mr. Y. C. Whang, Chief of the Traffic Division, and Mr. Yang Sho, Junior Expert, conjointly with Mr. Kwang Sung-Mow, Chief Engineer of the line, and on the 8th we travelled from Kalgan towards Tatung by train. We stopped at every station and every important bridge for inspection. On the 9th we inspected all the buildings, shops and station premises at Tatung. On the 10th we reached the end of the track of the Tatung-Fengchen Section, which was about 20 li from Tatung. On the 11th we examined the place where the Tung-Cheng line will join, and also examined the Weiren branch line. The entire trip took us six days.

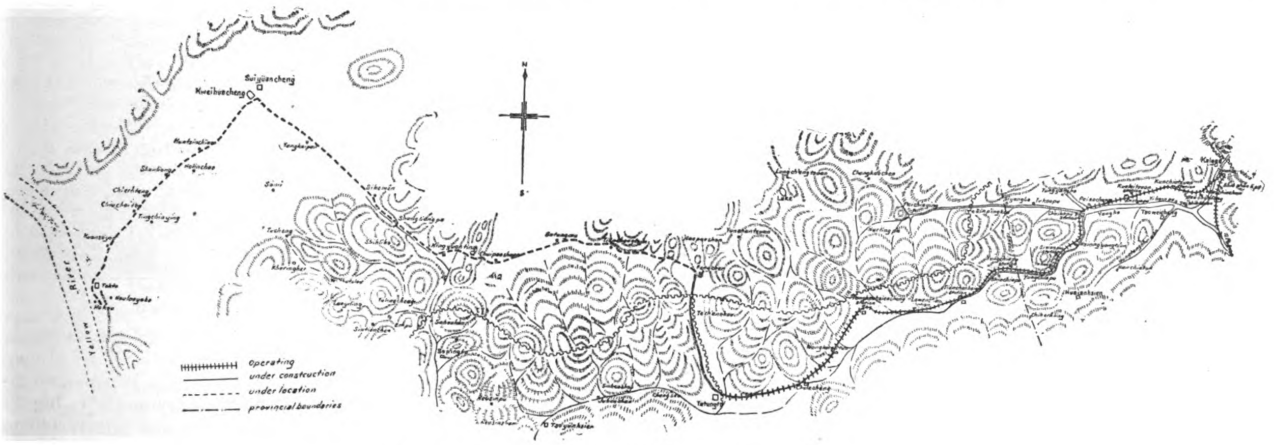
1. *The construction work of the entire section:* The construction work of the entire section between Kalgan and Tatung has been completed with the exception of the sidings at the Tatung Station. Half of the sidings originally planned have not been constructed on account of the traffic not being fully developed. The mileage of the main track and sidings, the number of bridges and drains and their dimensions, the stations, mechanical works, material storehouse, staff quarters, water-towers, turn-tables, electric wires, etc., are found correct according to the list submitted by the Peking-Kalgan Railway.

2. *The Track*: As to the track, the minimum radius of the curves is 1,000 feet, and the steepest gradient is 1:115, which are suitable for all the purposes of a main line. The route as originally surveyed and determined upon seemed too steep. In view of the difficulties in running the trains on the Kwan-Kow Section the original plan was modified at several points and the degree of gradient was changed from 1:40 to 1:115. Although the line is lengthened by about 10 li on account of this modification, the construction is much facilitated by choosing this level route, and half of the expense as originally estimated has been saved. The change of the route not only saves the capital expenditure but also makes it suitable for all purposes of a main line, which will prove of considerable benefit when the line is extended to Sei-Yuan or joined with the Tung-Cheng line.

3. *Bridges and Drains:* The largest bridges are the Yu-ho Bridge (18 spans of 100 feet each; height, over seven chang) and the Ta-yang-ho Bridge (16 spans of 100 feet each; height, over six chang). Next in dimension is the Shiao-yang-ho Bridge (5 spans of 100 feet each). The total number of major and minor bridges is 234 with 459 spans, and the total number of drains is 372 with 373 spans. The total length covered by bridges and drains is 14,360 feet. The expenditure for bridges amounts to $2,089,500, the average expenditure per foot of bridge being $145, which is less than half of the cost for bridge work on some of the lines newly constructed in our country. The construction is firm and the material used, strong. After careful examination they proved to be sufficiently strong for all purposes.

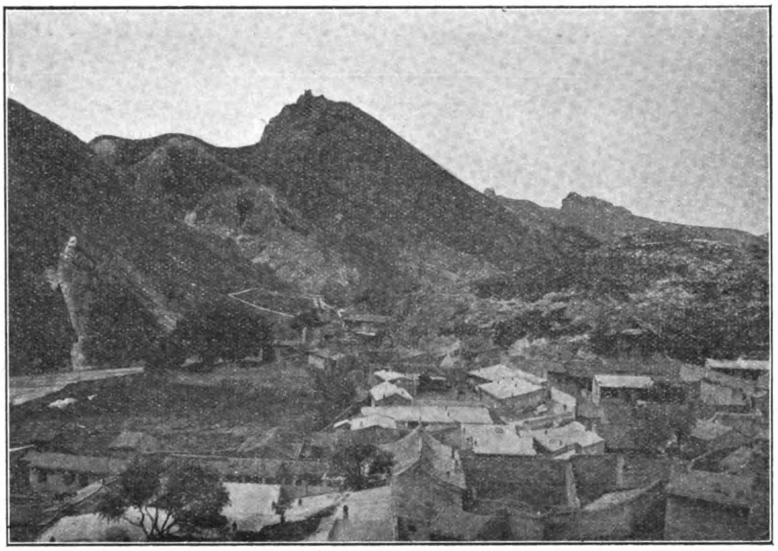
4. *Stations and Buildings:* All the stations and other buildings are constructed in simple style, all unnecessary embellishments being dispensed with. They are durable and fit for practical use. In order to encourage native products, foreign materials are avoided whenever suitable materials may be obtained from home producers.

5. *Rolling-stock:* As to rolling-stock, the wagon bogies are ordered from abroad while the upper structures are of good material and durable construction; and they are of the kind that can be easily repaired in this country. Safety devices are of the latest pattern, both air brake and hand brake being used. The wheels are of the Barhom type, which stands well the wear and tear at places where curves are sharp and numerous.

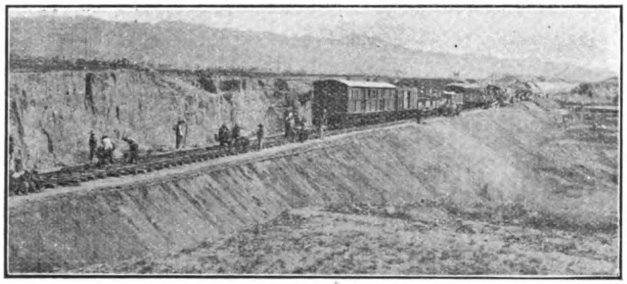


Route of Extensions of the Peking-Kalgan-Tatung Railway

6. *Comparison of the actual and estimated items of expenditure:* As originally estimated the length of the line was 321 li and the expenditure was a little over Tls. 7,016,000, which is about $10,000,000. It was to be completed in three and a half years (the work began in July, 1909). The line as now completed embraces a length of 331 li at an expenditure of little over $8,604,000. Reckoning from July, 1909, to the end of 1914, the work has taken about six and a half years. Although the period of construction is prolonged for three years the expenditure is about $1,400,000 less than what was estimated. If we compare the items estimated with those actually expended, we shall find that the expenditure for road foundation is about $1,380,000 less than the estimate. This is due to the adoption of the new route which is less hilly than the route first chosen. The actual expenditure for general direction is about $280,000 more than what is allowed by the estimate, on account of the extension of the period of construction. As to rolling-stock, the estimate provided for 18 carriages for the second and third class passenger train. Although these have not been purchased, there is a fund of about $70,000 set aside for the purpose. They have purchased one locomotive and 100 tons of wagon in excess of the estimate. However, taking the actual expenditure for

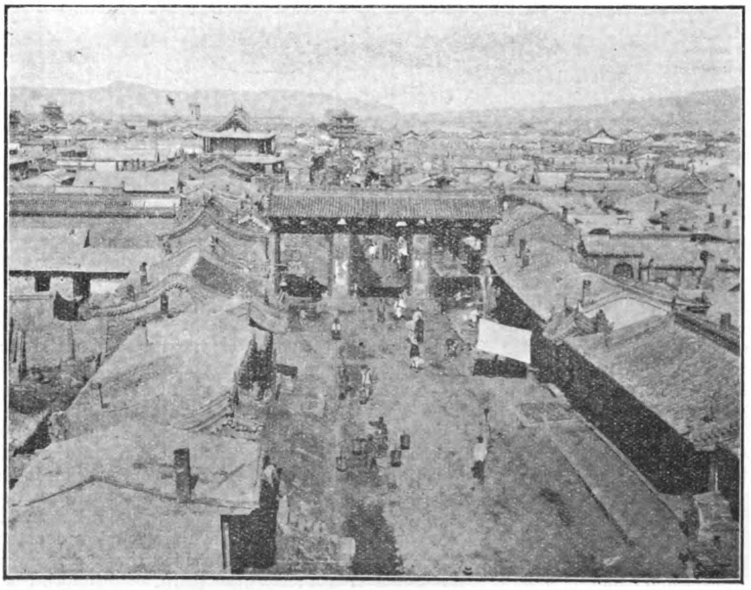


View of Kalgan, Former Terminus of Railway



Railway Crossing Chasm in the Loess

Concrete Culvert to Carry Embankment



View of Tatung-fu, Present Terminus of the Line

rolling-stock as a whole, it has not varied much from the estimated amount. The rest of the items of actual expenditure have not differed from the estimate to any appreciable extent. (A table showing the comparison of the different totals is herewith appended.)

7. *The Progress of Construction work on the Tatung-Seiyuan Section:* Work has begun on the Section between Tatung and Fengcheng, a distance of over 70 li. The track has been laid as far as Yangtsung, a distance of about 20 li. As soon as the bridge at Yangtsung is completed the track will be further extended, and in the month of June or July this year train service will be opened as far as Fengcheng. As the latter place is a trade centre, the earnings of the Railway will be greatly increased as soon as the service is established. Traffic is rather scarce beyond Fengcheng, and no further increase in earnings can be expected until Seiyuan is reached. We found that bituminous coal (natives call it Ta-Tang) is produced at Weiren-hsien, 70 li southwest of Tatung. On account of the lack of transportation means the coal is only mined in winter. The output is estimated at about 2,000 tons per day. If a sum of $1,000,000 can be raised within a year or so for the construction of a branch line to Weiren-hsien, this branch line would be able to contribute to the earnings of the main line and the annual income may be increased by $1,000,000 or more. Again, if we appropriate the surplus from the Peking-Tatung line for the construction of the Tatung-Seiyuan Section, it will be of great benefit to both lines.

The above is a summary of the facts about the line as they are and of the plans to be carried out in the future. If we take into consideration the facts of the line being one constructed with our own capital, the officials in charge being chosen by our own Government from among our own countrymen, the entire line lying in the extremely cold region of the northwest, having only six months in the year available for work on a large scale, we cannot but credit the officials in charge for their energy and enthusiasm in carrying out such a great engineering project, with the different parts of the work so properly laid out and at an expense so cheap. I beg to suggest that those officials who have rendered their services on this occasion be rewarded according to their respective merits so that they may be more encouraged in the future. Whether this can be done remains at your discretion.

Peking-Kalgan-Tatung Railway.

REPORT FOR THE YEAR FROM JUNE 30, 1913, TO JUNE 30, 1914.

In his report for 1913-14 the Managing Director of the Peking-Kalgan-Tatung Railway (Mr. Kuan Mien-chuen) explains that with the introduction of accounting forms, as arranged by the Committee for the Unification of Accounts, accounting work has been more accurate since 1913. In April, 1914, the Revenue Account of the Railway was transferred from the Traffic Department to the Department of Audit and Accounts in order to conform with the newly introduced uniform rules.

Owing to unfavourable conditions goods traffic was not so prosperous during the year under review, though the receipts on the Peking-Kalgan section exceeded those of the previous year by $430,000. This may have been due in a sense to the abolition of the likin tax at Fengtai station (the junction with the Peking-Mukden line), an action which also beneficially affected both the Peking-Mukden and Peking-Hankow Railways.

Owing to financial stringency the engineering work on the Chang-sui (Peking-Tatung) Extension could not be fully undertaken. The main bridge was built over the Yu-ho, at Tatung, and the engineering work was extended from Tatung to Fengchen, the cost amounting to $1,490,000, which was charged to capital account. The traffic receipts between Kalgan and Tatung were $23,000 less than in the previous year on account of this section being only partly opened for traffic.

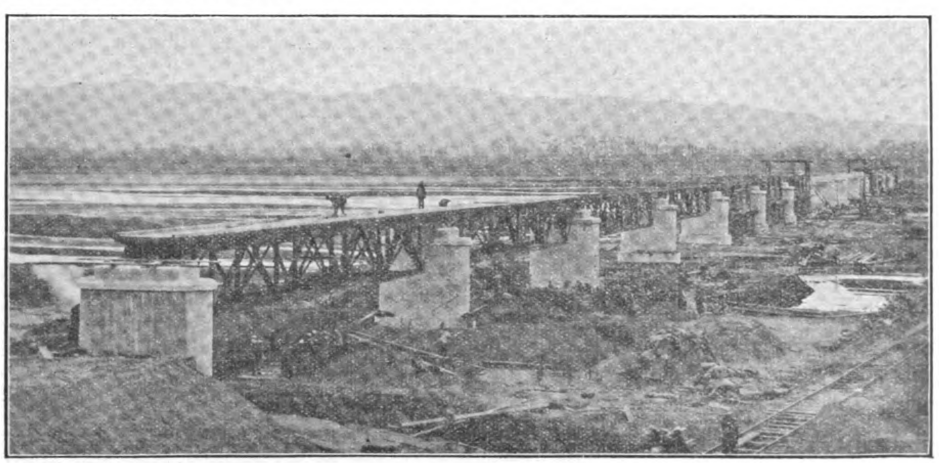
The following figures are included in the annual report:—

Cutting through Rocks along the Yang River

The Kalgan-Seiyuan Railway.

TABLE SHOWING THE COMPARISON OF THE MAIN ITEMS OF ACTUAL AND ESTIMATED EXPENDITURE FOR THE CONSTRUCTION OF THE LINE FROM KALGAN TO TATUNG.

Items	Estimated Expenditure	Actual Expenditure	Actual Expenditure in excess of estimated Expenditure	Actual Expenditure less than estimated expenditure
	$	$	$	$
General Direction	1,022,870	1,312,840	289,970	
Preliminary Expenses	307,280	157,380		149,900
Purchase of Land	398,240	365,150		33,090
Road Foundation	2,418,580	1,028,860		1,389,720
Bridges	2,149,300	2,089,500		59,800
Protection of the line		11,000	11,000	
Telegraph and Telephone	6,500	83,000	18,000	
Track	2,223,600	2,033,550		190,050
Station and Buildings	259,300	415,000	155,700	
Rolling Stock	1,179,400	1,107,000		72,400
Total	10,023,570	8,603,280	474,670	1,894,960
		1,420,290		1,420,290



Building Bridge Across the Yang River—Now Completed

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS AND SHIPPING

Chefoo-Weihsien Railway—A telegram from Chefoo to the Japanese press states that the Chinese Government has given permission for the proposed construction of the Chefoo-Weihsien Railway as a semi-Government enterprise, allowing private capitalists to invest therein, instead of as a purely Government venture. The Chinese Guild in Chefoo is holding conferences of its leading members.

Gift to Shareholders—The directors of the Nippon Yusen Kaisha have decided to double the company's capital of 22,000,000 yen by letting the present shareholders of the company take up all the new shares, one new share for each old one. The first instalment of each share, or 12.50 yen, is to be paid out of the reserve fund.

The directors also decided to pay each shareholder 6.50 yen in cash per share as a gift on the thirtieth anniversary of the establishment of the company. This cash distribution is strongly opposed by the authorities who declare that they will not sanction it. Minister of Communications Taketomi is reported to be denouncing the distribution of cash. He even declares that if the authorities of the Company in face of his opposition dare to adopt the plan, he will decrease the state subsidy.

O. S. K. Prosperous—The Osaka Shosen Kaisha has been doing a tremendous business since the beginning of war, and the profit for the first half of 1915 shows an increase of more than half a million yen over the same term of 1914. A meeting of the directors will be held to consider whether the surplus be put on reserve or be used as a dividend. Should the dividend be declared, the dividends of the company for this term will be 15 per cent.

Chosen Line Extends—The Chosen Yusen Kaisha has decided to extend its service between Fusan and Vladivostok to Nagasaki and Moji to provide facilities for trade with Siberia.

For Russian-U. S. Service—A Russian-American Conference will be called at Vladivostok soon to solve the old problems regarding the opening of a service between that port and America and to form an alliance on the matter of rebates.

Vladivostok is the only port Russia has in the Far East for the import of her war materials and since import across the Atlantic has now been rendered very difficult, this Far Eastern port has proved a very important feeder of the Russian army. Since the beginning of the war, the number of ships calling at this port has remarkably increased and at present a greater number of ships in port can scarcely be put alongside the quay. In consequence discharging work on the piers is greatly delayed. Besides four Japanese steamers with war materials from America, and two with rice from Rangoon, there were also several British and American ships busily engaged in discharging cargo, as well as the whole of the Russian Volunteer Fleet at work in the importation of war goods. Owing to lack of laborers the authorities have removed the restriction for the emigration of Chinese.

New N. Y. K. Steamers—The Nippon Yusen Kaisha will build six vessels of 7,500 tons and three of 3,200 tons the coming year. Orders for five have already been placed with the Mitsubishi Shipyard, to be completed in May, August and October of 1916. The order for the other four was placed with the Kawasaki Shipyard.

Japan Adds Battleship.—The Yamashiro, a new battleship which is now under construction at Yokosuka, will be launched in November, just before the Imperial Coronation.

The construction of the eight torpedo boat destroyers the appropriation for which passed the Imperial Diet in the recent session, has already been started at the Naval Docks at Yokosuka, Kure, Maezuru and Saseho, the Kawasaki Dock at Kobe, and the Mitsu Bishi Dock at Nagasaki respectively. As all the necessary materials are in hand the construction of these eight ships is to be completed by April next.

Tsingtau Fairways Clear.—Notice has been given that all submarine mines having been removed, the marine fairways to the port of Tsingtau are cleared of danger. However, navigation in the water-areas within three miles north and six miles west of Takungtao Island and 1.5 miles off Chufeng Island is strictly prohibited. Vessels drawing under 25ft. are now admissible to Main Harbour.

Chefoo and Amoy Tonnage.—The number and tonnage of ocean steamers entered at Foochow during the quarter ended December 31, 1914, was 125 ships of 125,346 tons, an increase of five ships, but a decrease of 7,855 tons from the same quarter of 1913. Of the total, British ships were 47.6 per cent, Japanese, 32.9, and Chinese, 18.2.

At Amoy there was a decrease of thirteen ships and 28,998 tons from the previous year, the totals being 200 ships of 251,728 tons of which 56.6 per cent. were British, 27.7 per cent. Japanese, 9.4 per cent. Chinese and 6.2 per cent Dutch.

Chinkiang Tonnage.—The total number and tonnage of ocean steamers entered at Chinkiang during the quarter ended December 31, 1914, was 26 ships of 34,652 tons, an increase of 5 ships but a decrease of 2,604 tons over the same quarter of the year before. The number of river steamers entered during the same time was 249 ships of 431,200 tons, an increase of 14 ships and 13,000 tons, over the same quarter of 1913. Of the total ocean steamers entered 61.9 per cent. were British, 15.2 Norwegian and the same percentage Chinese. Of the river steamers 50.8 per cent. were British, 26.3 per cent. Japanese and 22.2 per cent Chinese.

Penang Harbour Board.—The report of the Penang Harbour Board for the half-year ended December 31, 1914, shows a credit balance of $23,220. But after paying interest due to Government, amounting to $50,055, a debit balance of $26,826 is shown, and after deducting $18,828 brought forward from last year some $7,997 excess of expenditure results. The total expenditure on new works from July, 1913, to December, 1914, was $110,620. The tonnage of vessels using Swettenham Pier during the half year was 203,001, as compared with 340,348 during a corresponding period in 1913. The Board now has 98 wooden and 5 steel lighters with a tonnage capacity of 6,690 tons. During the half year 39 vessels were docked for painting and repairs, the tonnage being 37,017 tons as compared with 31 vessels and a tonnage of 29,935 for the previous half year.

M. B. K. New Shipping Base.—The Mitsui Bussan Kaisha Company, it is stated, has definitely decided to establish a shipping base in one of the ports of the Gulf of Mexico. The location of the base has not yet been fixed but the company is considering the erection of extensive warehouses in Galveston for storing cotton for shipment, although it is also said that New Orleans is being considered.

The directors of the Pacific Mail Steamship company, are seriously debating the advisability of severing all ties with the railroad interests now connected with the steamship company. A decision in favor of the move, would permit the company to divert its vessels from the Pacific trade to the Panama Canal trade between the east and west coasts of the United States. Under the Panama Canal act, steamship lines owned or affiliated with transcontinental railroads are not permitted to use the canal, for coast to coast trade.

FINANCIAL

Hongkong's Circulation.—The returns of the average amount of Bank Notes in circulation and of specie in reserve in Hongkong as certified by the Managers of the respective Banks, are as follows:—

Banks.	Average amount.	Specie in reserve.
Chartered Bank of India, Australia and China ..	$6,759,158	$5,000,000*
Hongkong and Shanghai Banking Corporation..	22,675,064	17,500,000
Mercantile Bank of India, Ltd	1,317,441	800,000†
Total	$30,751,663	23,300,000

* Sterling Securities deposited with the Crown Agents valued at $1,850,000.

† Securities with the Crown Agents £68,040.

China Paying Railway Loan.—The Ministry of Communications has paid into the Hongkong and Shanghai Bank and the Banque de l'Indo-Chine a sum of about $1,400,000 for payment of the half-yearly interest-coupons in respect of the Anglo-French Loan for the Redemption of the Peking-Hankow Railway of 1908.

Russian Bank for Mongolia.—The following is a translation from the Commercial and Industrial Magazine issued by the Financial Department of Russia:—

The application made by the Syndicate organized with the Commercial Bank of Siberia as its nucleus, in regard to the establishment of the National Bank of Mongolia has been sanctioned by the Minister of Finance. The capital is one million roubles and the Mongolian Government can purchase it after 50 years

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PROGRESS OF CHINA'S RAILWAYS

Sweeping changes have recently been made in regard to the management of many of the most important of China's operating railways. Special interest, therefore, attaches to the record of progress made by these lines and in the general administration of railways in China in the last few years. With the exception of the Peking-Kalgan line and its extension and one or two short lines the railways in China were built under the supervision of foreign engineers-in-chief, and are operated with the assistance of foreign engineers, accountants, and, in some cases, general managers. As a rule there is a Chinese Managing Director who is responsible to the Ministry of Communications for the working of the line under his control.

The Peking-Mukden Railway was the first important line to be operated in China. Although opened to traffic some time before the Boxer Outbreak in 1900, the official statistics that are available begin with the year 1902-03. The net earnings in that year were approximately 5 per cent. on the capital cost. The following year they were over 7 per cent. of the capital cost and the rate of progress thereafter was as follows. 1905, 20.89; 1906, 18.25; 1907, 13.04; 1908, 16.67; 1909, 20.40; 1910, 15.53: 1911, 16.70; 1912, 19.50; 1913, 18.58. The net revenue increased from $3,403,933 in 1904 to $8,817,942 in 1913. This is undoubtedly a magnificent record. During the ten years ended 1913 the railway has been earning a net revenue equal to about 17 per cent. on the total capital investment. The management of the railway has always made a point of charging expenses for maintenance and additions and betterments to revenue to the greatest possible extent, so that the results indicated are, if anything, too conservative. The mileage of the main line is 523 and branch line 84. A point about this railway that deserves notice is the excellent condition in which the permanent way and the rolling stock has been maintained.

The Peking-Kalgan, or, more properly, the Peking-Suiyuan, line is, as already remarked, the only line of importance that was financed with Chinese capital and built by Chinese engineers. From Peking to Suiyuan is about 400 miles, but the line is as yet only open for about 200 miles. The railway connects with the Peking-Hankow and Peking-Mukden systems at Fengtai, near Peking. Great engineering difficulties were encountered in constructing the section from Fengtai to Kalgan, much tunnelling, cutting and bridging being necessary. The fact that only a portion of the line is open to traffic has to be borne in mind when considering the financial results that have been attained. The section of the line from Kalgan to Changsui was only opened in 1913, so the following figures are only for about 125 miles, the section between Peking and Kalgan. This section was opened to traffic in 1909, but it did not begin to earn profits until the following year when the net revenue was $75,395, or one per cent, of the capital cost. In 1911 the net revenue was $508,794, 6 per cent. of the capital cost; in 1912 $1,289,670, 17 per cent. of the capital cost, while in 1913 the net revenue had increased to $1,567,370 which represents 20 per cent. of the capital cost. These excellent results are likely to be considerably improved when the full length of the railway is open to traffic. That this line is being economically handled is shown by the fact that in 1913 when the gross revenue was $2,865,394 the operating expenses, including all charges for maintenance, were $1,298,024.

The length of the Peking-Hankow Railway is about 800 miles. It was begun in 1897 and opened to traffic in December, 1905. This line, which is one of the most important in China, will eventually be linked up with the Hankow-Canton Railway and thus render possible rail transportation from the South of China to Europe. The earnings of the line were affected by the Revolution and the rebellion in 1913 when for long periods it was largely employed for military purposes. Even when it was not being so used the disordered and dangerous conditions that prevailed reduced passenger and freight traffic to a very considerable extent.

The following table shows the financial results attained by the Peking-Hankow Railway in the five years beginning 1909 and ending in 1913.

Year	Operating Revenue	Operating Expenses	Net Revenue
1909	$11,114,514	$6,849,557	$4,265,057
1910	12,242,858	7,341,907	4,900,951
1911	11,398,460	8,563,249	2,835,211
1912	13,656,618	7,356,457	6,300,161
1913	16,774,794	9,226,203	7,548,591

Detailed figures for the period under review in regard to the Tientsin-Pukow and some other operating railways are not immediately available, but the operating results of all the railways in China, as shown by an official return prepared by the Ministry of Communications, are highly favourable. The following table shows the operating results of all railways completed by 1909 for five years.

Year	Operating Revenue	Operating Expenses	Net Revenue	Proportion of net Revenue to total Capital.
1909	$27,117,820	$17,780,915	$ 9,336,905	4. 6 %
1910	29,149,691	18,273,079	10,876,612	5. 4 %
1911	28,185,699	19,673,162	8,512,537	4. 2 %
1912	34,782,513	18,687,967	16,094,546	8. 0 %
1913	39,420,686	22,774,523	16,646,163	8. 3 %

It has to be borne in mind that in many cases the revenue is derived from short sections of incomplete systems, and that consequently much better results can be confidently expected in the future if the recent change in management does not prove detrimental.

Passing from the earnings of the railways, it is of interest to consider what has been done to improve the general administration. Owing to the unique conditions in which China's railways were built and are operated, the work of systematizing the administration of the railways has presented extraordinary difficulties. As an illustration, the compilation of railway accounts and statistics, obviously a matter of the very first importance, was carried out by the officials of each railway in the manner that they personally deemed the best. The systems of accounts that were in vogue were the English, Indian, Belgian, German, Japanese and Chinese, and in some cases the railway administration changed the system from year to year. The financial year of different railways ended on different dates. As a result it was next to impossible to determine the actual condition of the railways and the progress they had made at the end of each year. The confusion caused by this lack of system was recognised by the Republican Government and steps were taken to secure uniformity. A commission consisting of experienced accounting officers of the Central Government and the chief accountants of the existing railways was appointed in 1913 to prepare a scheme for the unification of railway accounts and statistics. Dr. Henry C. Adams, the well-known American expert, was appointed adviser. After very exhaustive investigations the Commission was able to propose a system of accounts and statistics specially adapted to the needs of the country, which met with approval and was put into operation. The benefit of this uniform system has already been felt, and its advantages will become still more apparent as time goes on.

Unification of engineering standards is also recognised to be highly desirable and steps are being taken in this direction. The same causes that operated to create diversity in the accounting systems has prevented any uniformity of engineering standards. Readers of the FAR EASTERN REVIEW will recall our constant allusions to the imperative necessity of the adoption of a definite standard.

Among other reforms that have been carried out, one of the more important was in regard to through traffie. Passengers and goods may now be transported from any point on any one of the connecting lines to that of any of the other lines, thus bringing China in line with other countries. Through traffic arrangements have been made not only between lines in China, but with International Railway Managements. Considerable improvement has also been made in the passenger accommodation on the railways, particularly in regard to the third class passenger coaches.

Much has been accomplished and much more would have been done had not progress been checked by the stringency of funds. Speaking broadly it may be said that all reforms cost money and, unfortunately, the circumstances of the country prevent more than a limited proportion of the railway earnings being spent in administrative reforms. But, nowithstanding the financial difficulties, good results can be achieved by steady adherence to a settled policy. The factor that would be most likely to prevent effective reform would be the importation of politics into the railway administration. The railway should be run as a business concern and the best qualified men employed and given reasonable security of tenure in their posts. Many reforms can only be carried out gradually after patient investigation extending over long periods. The necessity for such reforms is recognised as a result of experience and it is, therefore, essential that responsible officials should, as far as possible, be maintained in their positions in order to obtain the best results from their activities. An official's interest in his work is largely dependent upon the knowledge that he is likely to be permanently associated therewith, and encouragement to suggest and carry out reforms is given by the belief that such reforms will be accomplished under his observation and direction.

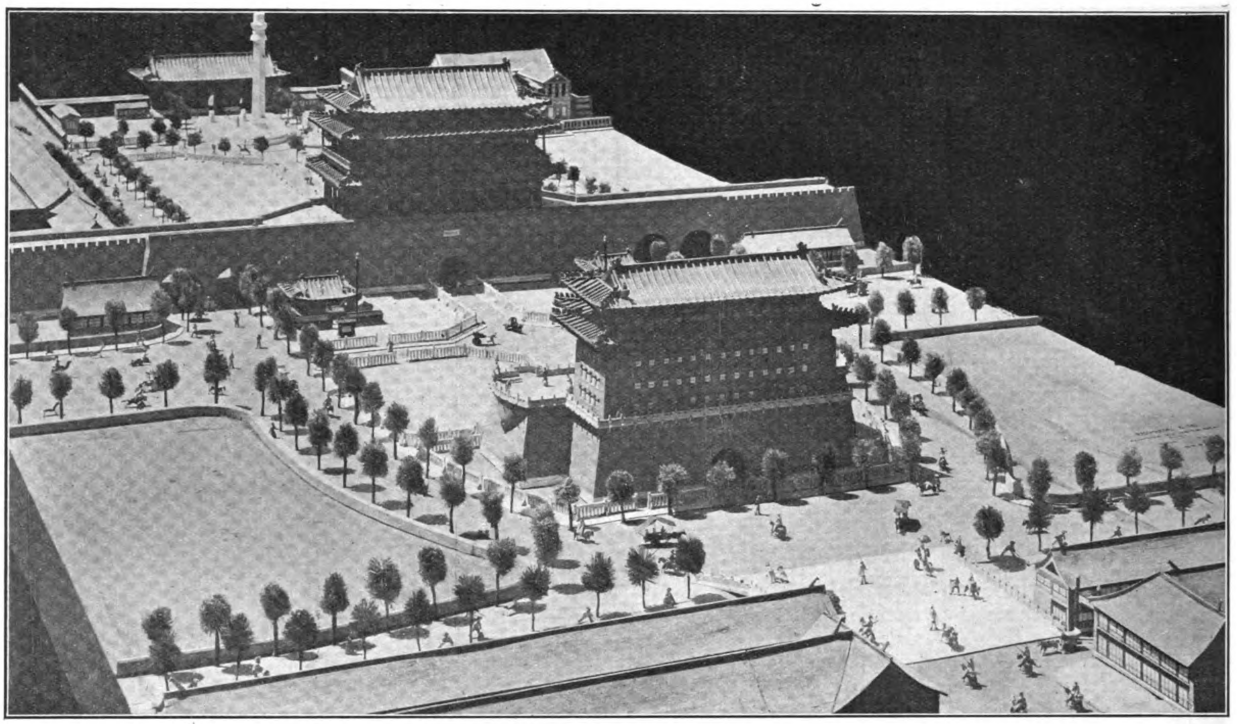
THE RESOURCES OF CHINA

The Work of the Newly-Created Commercial and Industrial Commission.

In almost every standard work relating to China, the greatest stress is laid upon the "illimitable resources" of the country. Occupying nearly a twelfth part of the land surface of the world, with every variety of climate, and possessing a vast population of frugal and unremittingly industrious people, the word "illimitable" seems hardly misplaced. But, although Chinese and foreign writers have joined in inviting the world to wonder at the vast resources of China, they have invariably dealt in generalities. The industry of the people, the wealth of minerals, the variety of agricultural products, have been referred to in general terms, but it may safely be said that there is less specific information available about the resources of China than of any other country of importance.

An essential preliminary to the proper development of the productive industries of China is systematic investigation and tabulation of all obtainable data. The importance of beginning this work at the earliest possible moment was recognised by His Excellency Chow Tze-chi, the Minister of Commerce, Industry and Agriculture, and upon his initiative the President has approved the establishment of the Commercial and Industrial Commission to which reference was made in the last issue of the FAR EASTERN REVIEW. The proposals made by Mr. Chow Tze-chi and approved by the Government were designed to confer upon the Commission sufficient power to collect and disseminate information calculated to improve China's industrial condition. The creation of this Commission with ample powers is one of the healthiest signs of progress that the Republic has yet given and there is every reason to expect that it will achieve results that will conserve and increase the wealth of the country and thus firmly establish the base for political development, improvement and consolidation. The wealthiest countries in the world are those which have paid the most sedulous attention to the collection of data relating to their industries and commerce and have thus been enabled to direct the energies of the people into the most productive channels. That China has adopted a similar policy is a proof that the irrational conservatism of the past has been abandoned, and that the most important of all her Ministries has adopted the modern methods that have brought success and prosperity to the leading industrial nations of to-day.

In view of the importance of the Commercial and Industrial Commission it is desirable to explain in detail its organization



THE NEW CHIEN-MEN FROM A PLASTER MODEL SHOWING APPEARANCE OF GATE AFTER REMOVAL OF THE CURTAIN WALL

IMPROVEMENTS AT PEKING

The Alterations at the Chien-men

On Wednesday, June 16, His Excellency Chu Chi-chien, Minister of the Interior, began the work of demolishing and reconstructing the old gateway of the Peking Chien Men, by removing the first stone, thus giving effect to the order of His Excellency President Yuan Shih-kai, that "a new way of communication shall be opened."

The higher authorities of Peking in discussing plans for the project submitted by the architect Mr. Rothkegel, insisted that all the buildings on the Chein Men Gate (the Imperial Gate of Peking) which were of any architectural beauty whatever should be carefully preserved, and that the pearls of Chinese architecture, the Northern and Southern Imperial Gates, should remain in all their old splendour to gladden the eyes of many future generations.

The reason which necessitated the pulling down of the walls enclosing the inner court of the Chien Men, was that these hindered the free movement of the heavy traffic. As the gateway under the northern tower was only seven metres wide, and consequently not large enough for the purpose, the walls surrounding the court had to be removed, and there will be constructed in their place two large roads 20 metres in width, which will converge at the bridge over the canal on the south side of the gate.

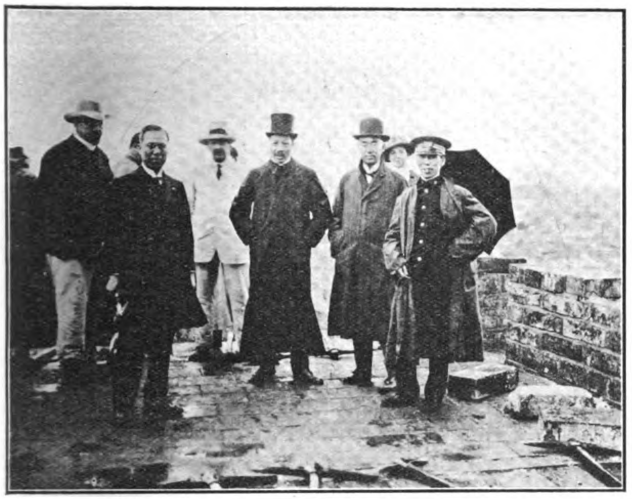
At the point where the two new roads will meet the city wall, four tunnels are being constructed, each measuring 9.50 metres in width, two for each street. Northwards, the streets will be so laid as to meet the tunnels and then continue onwards. These roads will be properly built with modern improvements, sidewalks, conduits, etc. The rain water will be drained off in a southerly direction.

The two northern ramps to the city wall will remain, and the old popular walk on the wall so cherished by the inhabitants of Peking, will be preserved. There will be no architectural changes on the north tower. Wide, showy stairways will lead to the southern tower, ending in a roomy terrace on the same height as the present wall, 13 metres from the roadway. On this southern tower a gallery two metres wide will be constructed on the southern, eastern, and western sides, thus offering a magnificent view of Peking and its surroundings, and the interesting flow of traffic. The interior of this southern tower will be renovated, and may be used either for exhibition purposes or as a museum.

The realisation of this reconstruction naturally necessitated the acquirement by the Chinese Government of several lots of valuable property together with the buildings thereon.

The large square measuring about 100 metres wide by 300 metres long, situated between the two roads leading from south to north, will not be built on, but will be surrounded by a handsome and tasteful low parapet wall, and the interior will be planted with lawns and shrubs. The two old walls situated in the square will remain, but will be suitably embellished according to the idea of Mr. Chu Kin-kow (Co-director of the Peking-Mukden Railway).

Praise for the final achievement and carrying out of this very useful and necessary project is due to His Excellency Chu Chi-chien, Minister of the Interior; Liang Tung-yen, Minister of Communications; Mr. Mai Chai-chee (Dr. Mark), Vice-Minister of Communications, and Mr. Chu Kin-how, Co-Director, Peking-Mukden Railway. These gentlemen have



OFFICIALS INTERESTED IN THE RECONSTRUCTION OF THE GATE

On the left Dr. George Mark, Vice-Minister of Communications (holding the silver pick) : in the centre, His Excellency Chu Chi-chien, Minister of the Interior; on the right Mr. Chu Kin-how, Co-Director, Peking-Mukden Railway.

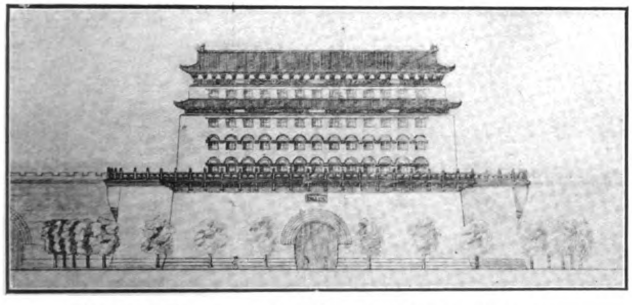
TEARING DOWN THE CURTAIN WALL

His Excellency Chu Chi-chien, Minister of the Interior, beginning the work of demolition at the Chien-men by removing the first bricks with a silver pick.

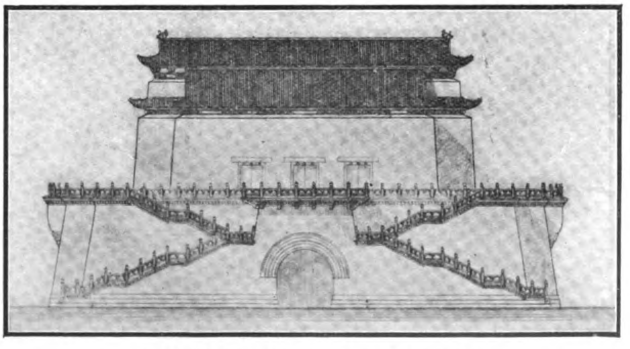
pressed forward the project towards final fulfillment with untiring zeal and forethought. After plans and designs had been submitted and altered so as to arrive at the best and at the same time the most workable scheme, Mr. Rothkegel, the architect, has been able to submit plans which have at last found favor and been accepted. He,

THE CHIEN-MEN, PEKING

This photograph overlooking the Chien-men clearly shows the system of construction of the gateways in the Tartar Wall of Peking. The clock-tower in the foreground of the picture is part of the terminal station of the Peking-Mukden Railway, while the arrow points to the terminus of the Peking-Hankow Railway. Work is now progressing in the removal of the intervening walls forming the curtain of the Chien-men, which will leave only the two gate towers standing. This will enable the construction of a connecting line of railway, as shown in a map on another page. The tower on the right is the main tower of the Chien-men.



SOUTHERN ELEVATION OF NEW CHIEN-MEN, FROM DRAWINGS BY THE ARCHITECT

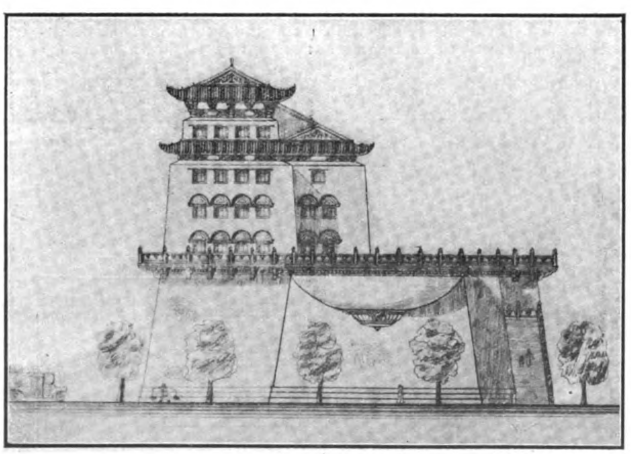


NORTHERN ELEVATION OF NEW CHIEN-MEN

His Excellency Chu Chi-chien, Minister of the Interior

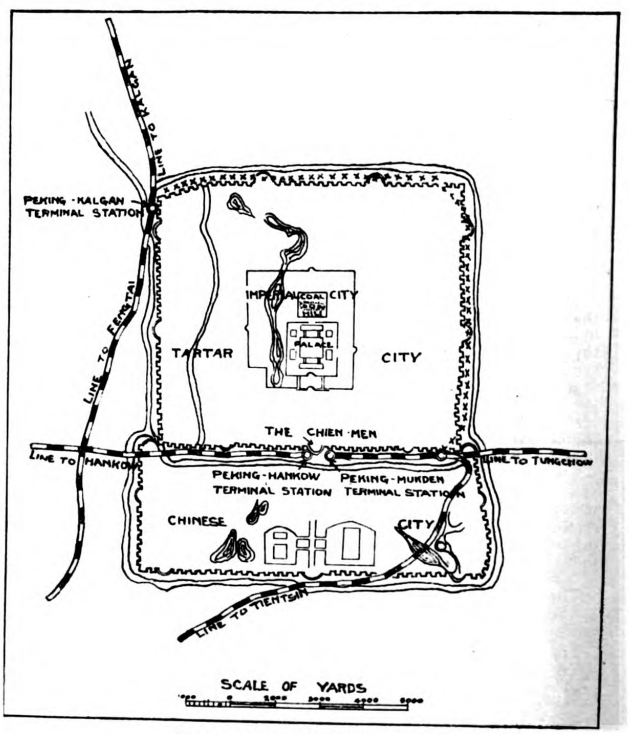
too, has been entrusted with the carrying out of the work, which we understand is to be completed in the short space of about four months.

The specifications for the work call for the demolition of the eastern and western semi-circular walls between the Chien-men Gate and the southern tower, all good materials from these walls to be used for reconstructional work. At the junction points of the eastern and western adjoining walls to the southern tower, a new wall is to be built on each side 2 metres thick. On the top



Eastern Side of Tower after Removal of Curtain

Mr. Ch'u Kin-how, Co-Director of the Peking-Mukden Railway, who is largely responsible for the alterations of the Chien-men.



Map showing the Chien-men

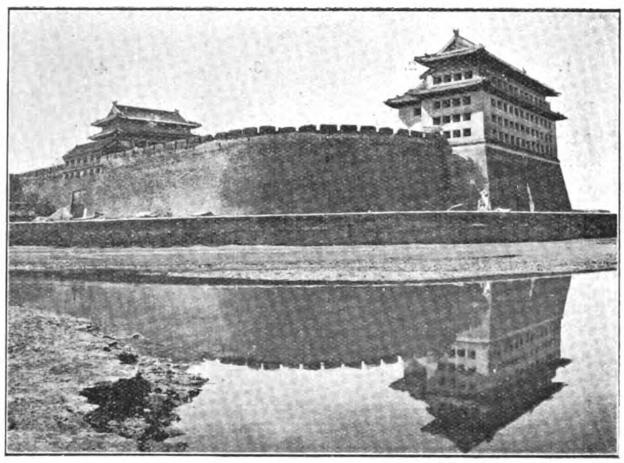
The line of crosses shows the route of the connecting railway.

of these two walls two large oval over-hanging balconies of reinforced concrete are to be built from good bricks to be taken from the old walls. On the northern side of this gate tower two flights of stairs are to be built. They will consist of eighty-two steps, each step three metres long. The steps of the staircase are to be made of new stone of good quality, 15 cm. high by 34 cm. deep, smoothly dressed and laid in a bed of cement. There will be four landings to each stairway. The foundations and the supporting masonry are to be constructed in the same style and quality as existing work. Round the south, east and west sides of the gate top, a new balcony six feet high will be built of reinforced concrete. Staircase, gallery and platform are to have balustrades of reinforced concrete with richly worked Chinese ornamentation. The interior of the south gate tower is to be provided with eight new doors opening on the gallery, and also eight new windows. All the existing eighty-two windows are to be provided with glass window frames. The old shutters are to be removed. The northern side of the interior at present open to the roof is to have three stories corresponding to those on the southern side of the interior. The existing stairs inside being too steep and too small are to be removed and replaced by a new broad and convenient staircase. On the south side, 50 windows are to be decorated with semi-circular mouldings. At the junction points of the semi-circular walls and the main wall two openings are to be made on either side of the Chien-men Gate, each to be nine metres wide and eight metres high. Each of the four openings is to be provided with a high double winged gate four metres high, of pressed sheet steel to move on rollers on iron rails laid in the roadway. On the side of the semi-circular walls which are now being demolished, two roads are being constructed. All the existing stone paved roads are to remain, but they will be renovated. The new roads are to be laid with stone rubble covered with sharp sand to be pressed to a depth of 30 cm. by steam rollers. The roads are to have sidewalks, and iron chains on reinforced concrete pillars are to be erected.

The two small yellow tiled houses which used to grace the circular wall, have been pulled down and will be re-erected on the north side of the Chien-men tower.

ANOTHER VIEW OF THE CHIEN-MEN

This view shows the passage way through the main pavilion, as well as the curtain which is to be removed



THE ANTING-MEN

As in the case of the Chien-men the stone curtain shown in this picture will be removed, leaving the towers standing.

The Care of Motor Tyres.

Despite the fact that tyres wear out sooner than any other accessory of a motor car, many motorists give them no more attention than they give the springs. They seem to regard tyres as a necessary evil, at best, little realizing that the mileage now obtained from tyres, far greater as it is than that of a few years ago, could be still further increased if tyres received the same watchful care that is given to other destructible supplies.

The proper care of tyres is not a burden upon any motorist. It is a matter merely of watchfulness, of anticipating rather than repairing trouble. A knowledge of the necessities of the modern tyre is first needed; then the rest is easy.

A motorist should know these eight things:

The correct use of tyre sizes and types.

The details of application and inflation of tyres.

The causes of excessive wear.

The causes of tyre injuries, and the effect of neglect.

The use and abuse of tread attachments and tyre fillers.

The care of inner tubes.

The causes of tyre deterioration, and proper storage.

What to demand in rims and flaps.

It formerly was necessary to gather this information in haphazard manner, wherever bits of it might be available, but the timely booklet prepared by the manufacturers of Firestone tyres gives it all in a form that fits the pocket of either motor car or coat. Under approximately the same headings as are given above all the facts essential to getting the utmost mileage from tyres are discussed in clear, simple language.

An easy guide to knowledge of the proper tyres is found, for instance, in the table of weights that a tyre will support without undue strain. A 34×4 tyre will sustain a weight of 650 pounds in the front and 800 pounds in the rear—a total weight of 2900 pounds. Clearly, a 30-hundred-weight car should carry larger tyres.

A timely word is said regarding inflation of tyres in hot weather, and the old bugbear of danger of blow-outs from over-inflation is vanquished. An increase in temperature of 20 degrees increases the pressure by only three pounds. Thus, if a tyre is inflated to 70 pounds pressure, at a temperature of 60 degrees, an increase of temperature to 90 increases the tyre pressure only to 75 pounds.

The motorist should avoid driving in ruts. The sides of tyres are unnecessarily scraped, and in the long run the tyres are bound to deteriorate. Driving in a rut with the tyres partly deflated is the height of tyre abuse.

Much has been said, but much more can still be said, of the foolishness of allowing tyres to stand in oil. Oil is a solvent of rubber, and the ultimate effect is as certain as if clothing were allowed to stand in acid. Even the grease that often is spattered upon tyres from leaking differentials should be wiped off at the end of the day.

The necessity of prompt repair of punctures and cuts is obvious. It is a good plan to have a workman experienced in handling tyres, inspect them at least once a week, and carefully fill all cuts in the rubber or fabric. Water is almost as damaging in cuts as stones and other foreign substances, for while rubber is waterproof, the basic fabric is not.

It would be hard, within the compass of this article, to include all the good advice of the 50-page booklet from which the above information has been taken. It should be in the hands of every motorist, and, what is more, the knowledge in it should also be in his head Many miles could be saved by following to the letter the principals there laid down.

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

S.M.R. Co.'s Regular General Meeting.—The 14th regular general meeting of the South Manchuria Railway Company's shareholders was held at the Tokyo Chamber of Commerce. The meeting was presided over by Baron Y. Nakamura, President, who explained the Co's position upon the proposed splitting-up of the Company's shares of Y200 each into shares of Y100 each. A motion was advanced to resolve each into four shares of Y50 each, but it was only presented in the shape of a hope by some shareholders, in view of the overwhelming majority favouring the Y100 proposition, which was passed unanimously. On the motion of Mr. K. H. Okura, a committee of five was nominated for electing the successors to the present officers after that date. The committee comprised Messrs. Okura, Hosino, Kume, and Nakaya, in addition to the Chairman. The committee repaired to a private room to fix upon their choices, which were reported to the meeting as Messrs. Nakahashi, Kawakami, Magoshi and Ohashi (all re-elected) and Mr. K. Koyama, President of the 43rd Bank, Osaka, as successor to Mr. Iwashita.

The Chairman next proceeded to report the condition in which the Company stands, concluding with the Company's splendid prospect as the aftermath of the peaceful solution of the Sino-Japanese issue. Then the statement of accounts, as reproduced below, was submitted. Hopes were expressed that the Company's shares would be exempted from income and incidental taxes and also would be included in the approved list of securities of the Nippon Ginko. A few other propositions were laid, but the propositions presented by the Company's Directorate were adopted without division.

STATEMENT OF ACCOUNTS

For the Fiscal Year Ended March 31st, 1915.

GENERAL BALANCE SHEET

on March 31st, 1915

ASSETS

Capital unpaid		Y 36,005,720.000
Property taken over from the Japanese Government		100,000,000.000
Stores		6,213,444.717
Coal in stock		979,395.719
Shares in other companies		1,188,273.000
Capital expenditure:		
Railway	Y 73,498,298.937	
Steamship	4,970,435.698	
Electricity	4,916,260.455	
Gas	1,383,846.613	
Harbour & Wharves	12,595,805.165	
Mines	15,042,197.414	
Workshops	6,261,224.304	
Hotels	2,016,880.162	
Land Improvements	4,740,802.165	
Land	10,621,987.721	
Buildings	11,541,158.876	
	Y 147,588,987.501	
Discount on debenture issue, less amount written off		4,362,368.680
Sundry debtors		2,627,800.967
Payments on Suspense a/c.		2,546,224.935
Payments on a/c. of uncompleted works (Workshops)		317,627.315
Payments on a/c. of uncompleted works (Construction)		128,612.091
Deposits		7,418,749.693
Agencies		458,243.370
Postal & Revenue		8,404.035
Cash in hand and at Bank		322,117.164
Total		Y 316,092,379.027

LIABILITIES

Capital Authorized		Y200,000,000.000
Capital subscribed		Y 160,000,000.000
Reserve prescribed by Law		1,491,252.620
Special reserve		10,900,000.000
Debentures		117,156,000.000
Sundry creditors		2,646,439.164
Receipts on suspense a/c.		10,781,426.758
Employees' savings deposits		2,860,314.270
Guarantee money		90,550.200
Balance brought forward from Last Term	Y 2,625,295.623	
Balance for the Term	7,541,091.362	
	10,166,386.985	
	Y 316,092,379.027	

PROFIT AND LOSS ACCOUNT FOR THE FISCAL YEAR

Ended March 31st, 1915.

DR.

To Railway expenditure	Y 8,345,286.210
„ Steamer	1,220,405.970
„ Mining	11,858,860.420
„ Harbour	1,963,966.720
„ Land	2,864,199.550
„ Hotel	309,800.550
„ Electricity	694,875.240
„ Gas	114,912.090
„ Sundry losses	424,085.203
„ General Management Expenditure	3,088,128.760
„ Interest on Debentures	5,564,910.000
„ Writing off Discount on Debentures issue	680,003.280
„ Balance for the Term	7,541,091.362
	Y 44,670,616.355

CR.

By Railway receipts	Y 23,216,721.520
„ Steamer	1,051,332.500
„ Coal	14,075,823.540
„ Harbour	1,290,612.140
„ Land	1,778,544.650
„ Hotel	253,001.600
„ Electricity	1,101,737.930
„ Gas	303,243.950
„ Sundry	75,049.525
„ Interest a/c.	624,558.890
	44,670,616.355
Net profit disposed as follows:—	
To Reserve prescribed by Law	377,054.570
„ Dividend on Government shares	
„ Dividend to shareholders, other than the Government, at the rate of 6 per cent, per annum	1,420,000.500
To Supplementary dividend to shareholders other than the Government, at the rate of 2 per cent per annum	478,333.330
To Special reserve	2,500,000.000
„ Bonus to Officers	300,000.000
„ Honorariums for Retired officers	35,000.000
„ Balance carried forward to the next term	2,560,969.085
	10,166,386.985
By Balance brought forward from the preceding term	2,625,295.623
By Balance for the term	7,541,091.362
	10,166,386.985

S. M. R. Co. Traffic Returns.—During the month of June the S. M. R. Co. Traffic Returns ran as under:—

COMPARED WITH LAST YEAR

Passenger receipts...	Y 271,703.09	− Y 52,753.58
Goods receipts	1,062,248.03	+ 102,145.62
Warehousing „ ...	21,821.74	
Miscellaneous	52,347.19	
	1,408,120.05	

The total traffic receipts from April last to June amounted to Y5,698,277.22, being an increase by Y934,534.77 over the corresponding period of last year.

Conditions in Shantung.—At Moji an interview on the condition of the Shantung Railway and the present situation was given by Mr. T. Fujita, the superintendent of the Railway, who has been recalled by the Government.

The captured lines have been all repaired, he stated, but it will take two months more to complete certain repair works. The receipts of the lines are 250,000 taels or only half the figure netted by the Germans. The rolling stock of the railway is very incomplete and accommodation in cars is too bad to give any degree of satisfaction to passengers.

Owing to diplomatic troubles, stated Mr. Fujita, the Chinese merchants are holding off from purchasing, evidently preferring to wait further developments. Accordingly trade is now in suspense. No cargo from Tsinan for Europe comes down to Tsingtao and the port is very lonely.

The mines along the railway lines are partially worked while water is being pumped out of the pits. The daily output is now limited to 500 tons. Japanese residents in the interior are strictly watched by General Chang Sun's troops under the pretext of protection.

New Line in Manchuria.—The railway line extending 65 miles between Supingchiai to Tsengchiatang in Manchuria has been decided to be undertaken by the South Manchurian Railway Company and steps are being taken to build the line. The line in Eastern Inner Mongolia to join the above line at Taonanfu will soon be prepared to be built.

Wants to Buy Cranes.—Through the Harbin consulate the commercial department of the Chinese Eastern Railway has cabled to the United States requesting quotations on three powerful steam locomotive cranes, railway scales, and a large order of tarpaulins to cover goods exposed at railway stations, where there are insufficient warehouses for storing them against the weather.

Direct Russo-American Freight Service.—The assistant chief of the commercial department of the Chinese Eastern Railway states that direct Russo-American freight transportation between Vladivostok and American Pacific coast ports has been arranged. For the present only Russian steamers of the North Steamship Co. and the Volunteer Fleet are to be placed on the run, but it is expected that later on American steamers also will be engaged on this route. It has been suggested that in connexion with the opening of this new commercial route a Russo-American chamber of commerce should be established at Harbin, similar to the one organized at Petrograd.

American Cars Ordered.—The Chinese Eastern Railway has placed an order for 10,000 steel freight cars in the United States. These cars are to be brought to Harbin in sections and assembled there, and the railway authorities are already making preparations for putting them together at the Harbin shops. An official states that the cost of this work alone will be in excess of $250,000 United States gold. The work will be continued night and day, and the expenses for lighting the grounds will total $12,500. It is said that in addition to the 2,000 laborers already employed 3,000 more will be required for assembling these cars at the railway shops. The effort will be made to work upon 300 cars at a time, and it is expected that from 50 to 60 cars will be completed ready for use each day.

Siam Railway Receipts.—Following are receipts from 836 klm. of broad gauge lines of the Siamese Railways for the current year:

	Approximate Year 2458	Actual Year 2457
Passengers	T224,000.	240,466.
Goods	203,000.	126,623.
Others	3,970.	3,602.
Total	430,970	370,691.

The total April, 1914, to March 1915, was 945,206, as 944,919.

The new Yokohama station now under construction will be completed by the end of the present month at the latest and opened in the early part of July. The new building is surrounded on three sides by rails just as those often met with in Germany. The style is the modern Renaissance and triangular.

Hankow-Ichang Bridges.—Tenders are called for the supply of about 845 tons of steel bridges as follows:

1 Steel Bridge of a span of 21 meters.
1 Steel Bridge of a span of 31. 5 meters.
2 Steel Bridges of a span of 42 meters each.
4 Steel Bridges of a span of 60 meters each.

Tenders are to be forwarded to the Director General of the Han-Yueh-Chuan Government Railways at Hankow up to September 25. 1915 at 6 p.m.

Tenders presented up to that date will be opened in the presence of the bidders at the Director General's Office at Hankow. Tenders have been called for also in Germany, France, Great Britain and the U.S.A. for which the opening day has been fixed also for September 25, but acceptance of tender will not take place until when result of all tenders has been received at Hankow.

Embargo on Orient.—The Western Pacific has announced a partial embargo on traffic destined for the Orient and Australia from San Francisco because of the difficulty in obtaining space on ocean steamers. Agents will be authorized to sign bills of lading on shipments for China, Japan, Australia, New Zealand and the Philippine Islands provided specific bookings can be made.

Amur Railway.—The struggle in Europe has not made Russia let up in the least on her work in the construction of the Amur Railway. The western and middle sections of the line were opened last August, and the traffic on the eastern section was started on March 14, although the service is still limited to three trains a week. The iron bridge across the Amur River is still uncompleted. Last winter rails were laid on the frozen stream and communication with Khabarovsk was maintained, but when ice melted ferry boats had to be employed. The bridge, according to the original plan, is to be completed next spring, but owing to the lack of material and labor instanced through the war, the work will be delayed.

With the advancement of work on the Amur line, the improvement of the Usuri Railway, to be connected with the former, is made necessary, and a sum of five million roubles is to be disbursed during the current year for the purpose. One million roubles will be spent for the construction of an indirect line to Kivarisowa, another one million for expenses of double-tracking the section between Vladivostock and Nikolisk, while the balance will be used for the Khabarovsh and Nikolisk section.

Manila Railway Tariff.—Should the board of public utilities approve the new base tariffs proposed by the Manila Railway company to take effect on August 1, second class passenger accommodations will be abolished, first class rates will be somewhat reduced, and those of third class passengers correspondingly raised. Where in the past there have been but four classes of freight there will be seven. On the first four classes rates are raised, but the addition of the further number permits of lowering the charges upon articles most commonly shipped over the line. A general average of the change shows approximately a 10 per cent increase. The proposed passenger rates, covering only first and third class accommodations, are as follows: First class—1 to 100 kilometers, P.04 per kilometer (3.2 cents gold per mile), 101-200, P.035; 201-300, P.03; 301 upwards, P.026. Third class—1 to 100 kilometers, P.022; 101-200, P.02; 201-300, P.018; 301 upwards, P.016.

Shanghai's Railless Cars.—The railless electric cars that were put on several months ago by the Shanghai Tramways Company and abandoned because they tore up Fukien Road have been put on again. Fukien Road has been rebuilt with a concrete foundation and surface, so that it will be able to bear the weight of the cars. Five cars will be kept in service all the time.

The following is the traffic return of the Shanghai Tramways for June, 1915, and for six months ended June 30, 1915, with figures for the corresponding periods last year:—

	June, 1915	June, 1914
Gross Receipts	$165,843.87	$109,165.24
Loss by currency depreciation	28,102.75 Mex.	26,625.95 Mex.
Effective receipts	$77,651.12	82,539.29
Percentage of loss by currency depreciation	28.59	25.99
Car Miles run	273,441	200,910
Passengers carried	4,704,774	4,840,420
	6 months ended June 30, 1915	6 months ended June 30, 1914
Gross Receipts	$633,328.21	$636,242.94
Loss by currency depreciation	168,997.67 Mex.	147,281.55 Mex.
Effective Receipts	$464,330.54	$488,961.39
Percentage of loss by currency depreciation	28.47	24.50
Car miles run	1,616,469	1,602,117
Passengers carried	27,672,480	26,423,364

Canton-Hankow Railway.—The offices of the Canton-Hankow Railway have been removed to the new buildings outside Wuchang, and the new address of the railway is Wuchang, c/o Post Office, Hankow.

SHIPPING

American Flag at Saigon.—One of the most striking features of the commerce and navigation of Saigon during 1914 is the increase in vessels flying the American flag, which made 14 visits in 1914. With two exceptions these took place in the July-December half of the year. Already, in 1915 7 American vessels have visited this port. On two occasions during the present fiscal year this port has witnessed the unusual sight of the presence of 3, and on one occasion of 4, vessels flying the American flag. These ships are all well-equipped vessels, ranging from 1,410 to 2,005 tons, and they compare not unfavorably with vessels of European nations engaging in Cochin China commerce.

The causes of this increase of American vessels are the unusual rice crops of 1913 and 1914, the quietness of insular trade in the Philippines, and the war. The U. S. transport *Warren* made one trip and the U. S. cable ship *Rizal* several trips from Manila for rice. The Philippine Steamship Co.'s vessels, *Rubi* and *Zafiro*, formerly engaged in passenger traffic between Hongkong and various Philippine ports, have been chartered to carry rice from Saigon to Hongkong and Singapore. The *Mackinaw*, a tramp steamer belonging to the Robert Dollar Co., happened to be in these waters at the outbreak of the war and has found this trade profitable because of the scarcity of available tonnage and the consequent higher freight rates. The *Rubi* and *Zafiro* carry passengers. They have a tonnage of over 1,400 each and are well equipped for the local traffic. For the first time in history an American can travel from San Francisco to Saigon in vessels, running on a fairly regular schedule, under the American flag.

Pacific Mail Cuts Honolulu.—A Honolulu message to the *Osaka Asahi* states that the Pacific Mail Steamship Co. has announced the discontinuation of call of its steamers at Honolulu after October and the operation of a direct steamer service between San Francisco and Oriental ports. The proposed abolition means a telling blow to the port of Honolulu.

From the aforegoing telegram it may be seen that the P. M. S. S. Co., which was generally anticipated to be dissolved with the operation of the U. S. Seaman's Act from next November, as reported previously in these columns, will continue maintaining its trans-Pacific service. The Company's representatives approached the Washington Government, according to wire advices, for the withdrawal of the Act and, in consequence, the Government authorities have been prevailed upon to postpone the operation of the Act indefinitely.

Minnesota's Record Cargo.—When the Northern Pacific liner Minnesota steamed out of Yokohama on her last trip, she carried the largest cargo ever shipped in one bottom on either the Atlantic Ocean or the Pacific, according to the general agent for the Minnesota in Yokohama. The total of the cargo is estimated at 30,000 tons.

Some of the items of the cargo were of themselves almost records. A shipment of Formosan tea transhipped at Kobe, amounting to 37,425 chests; a consignment of Manchurian maize, also transhipped at Kobe, of 43,430 bags; a consignment of 38,496 bales of hemp from Manila for Chicago, and 2,730 bags of peanuts. The liner also carried 1,500,000 yen in gold.

This cargo exceeded the liner's normal capacity by some 2,000 tons. This was possible because no steerage or third class passengers were carried and some of the second class space was used for cargo. Teak timber, bundles of rattan and a consignment of 800 cane chairs for the Glacier Park Hotel, Glacier National Park, Montana, were stowed on deck. The Minnesota will also carry a large cargo when she sails from Seattle in the last part of July for Vladivostok. She will discharge 20,000 tons of miscellaneous cargo at Vladivostok alone.

Japanese Yards Active.—The shipbuilding industry in Japan, says the *Nagasaki Press*, is said to be in a very flourishing condition just now. Not only are the Mitsu Bishi and Kawasaki Dockyards fully occupied with orders but the smaller yards are sharing the prosperity. The Hokkaido Tanko

of American products. The city was to be self-supporting, and to launch it a company was to be formed to provide the necessary capital. The idea was so utopian that even the Chinese, who have a weakness for and delight in dreams, failed to take any more than a passing interest in it, and from what we can see it has, like many another scheme of enthusiasts, been laid away in the limbo of forgotten things.

All these projects show, however, that there is a desire on the part of many Americans to see their country and its products more permanently and effectively established in this field. But so far no one seems to have hit upon a plan of procedure that will appeal to the manufacturer as eminently practicable. It is certain that the business men of America, who are famous for their hard-headedness, will not discard any proposal pregnant with success. On the other hand they are certain to jump at it, and in the absence of evidence of a definite movement to establish an exhibition in China we can only conclude that no feasible plan has yet been evolved, or, if one has been that no man carrying sufficient weight, has yet come forward to present it.

THE ANGLO-CHINESE ENGINEERS' ASSOCIATION, LTD.

A refreshing illustration of the fact that the Briton is capable of doing two or three things at the one time is furnished by the formation in England of a new Association of Manufacturers to seek openings in China for the products of their factories. Despite the abnormal disturbances caused by the great war, in which the British Empire is one of the most valiant participants, English industrial managements are able to think ahead and prepare for the day when peace shall prevail and workshops shall be making machinery instead of munitions. Not the lust of battle nor the wild helter-skelter rush of their mills to keep pace with the tremendous needs of the British armies apparently have the effect of clouding their viewpoint. Through the murk of battle they are able to see the possibilities of expansion in China, and to take advantage of those possibilities a number of them engaged in non-competitive production have grouped themselves and have organized a selling medium under the title of the Anglo-Chinese Engineers' Association, Ltd. This war-born organization will eventually fly the British flag in China and endeavour to gain conquests for British-made machinery. The field is a large one; there is room for them; and all admirers of sensible organized effort will applaud the appearance of a well-armed engineering Richmond entering the fray of the peaceful constructive arts, particularly as he emerges from the clamours of a destructive and bloody European strife.

The new Association has been organized by Mr. Arthur J. Moore Bennett, whose energetic and trenchant pen has long been employed in an effort to awaken the British people to the potentialities of the markets of China. In him the Association has an energetic manager, possessed of an intimate knowledge of a large part of China, as well as acute powers of observation, and a keen nose for markets. Hitherto he has striven to influence others to be up and doing, and his appearance in the ranks now looks as if, in desperation, he has decided to gird his loins and conduct a campaign himself. As the Lord helps those who help themselves we have no doubt that the new Association, when it is installed, will find the venture it is making highly profitable. China is bound to go on expanding, and those on the ground deserve all that their foresight and prudence enable them to garner as developments proceed. The London address of the new Association is 88 Fenchurch Street, E.C.

COTTON IN CHINA.

It has always been a matter for surprise that cotton cultivation and manufacture has not shown more progress in China. In many parts of the country the soil is eminently suitable for the cultivation of the cotton plant. The staple is very short, but this defect can be, and to some extent has been, remedied by the introduction of better seed. With her inexhaustible supply of cheap, but efficient, labour China should be able to grow and manufacture enough cotton to supply most if not all her requirements. This is far from being the case. In 1914 China imported cotton goods to the value of $267,388,500 Mexican currency.

The Commercial and Industrial Commission which was recently established by the Ministry of Agriculture and Commerce has issued a circular letter to the provincial authorities in Chihli pointing out the situation in regard to cotton and emphasizing the necessity of preventing so much money annually being sent out of the country. It was urgently necessary that means should be adopted to encourage cultivation and the establishment of mills. In order that an organized and systematic effort might be made to cause increased cultivation and manufacture, the Commission is obtaining specimens of the seeds used in the districts where cotton is cultivated and samples of cotton cloth manufactured in Chihli. A careful examination will be made of these and suggestions that will make for improvement given where required. It is hoped that, if in Chihli sufficient cotton can be grown and manufactured to meet local wants, the object lesson thus supplied will inspire the other provinces to adopt measures directed to a similar end.

NEED OF AN INSPECTORATE-GENERAL OF RAILWAYS

On August 12 President Yuan Shih-kai issued a Mandate in connexion with the administration, or mal-administration, of the Peking-Kalgan Railway which again emphasises the pressing necessity for thorough reform of railway management in China. The railway system of the Republic is expanding to such an extent that serious attention must be given at an early date to the introduction of measures calculated not only to remove the conditions which provoked the Presidential wrath, but for all time to allay any anxiety that might be generated in the minds of foreign bond-holders by reports of faulty control or the misconduct of responsible railway officials. The only measures so far adopted to cope with the mishandling of finances, and at the same time to inaugurate some definite book-keeping system, are those embraced in the scheme for the unification of accounts. Splendid as this advance is it is not sufficient. What is needed is the creation of an Inspectorate-General of Railways, the duties of which will be the general management of all of the State lines now in operation or in course of construction. China has no adequate central instrument for the efficient development and administration of what should be her greatest earning factors, and the time is rapidly approaching when she will be compelled by outside influences to create such an organization as that suggested if she does not of her own volition do so. A wise government would set to work at once to engage from abroad experts in railway control; men who have proved their competence; who would come to China as servants of the Chinese Government; who would work under the Minister of Communications for the economic development of the railways, and who would be proud to reorganize and elevate the system to the plane which it should occupy. The lines are now notorious for their lack of homogeneity in management, though it must be said efforts have been made by foreign officials, with some little success, to co-ordinate essentials. However, the question still remains one of the most important confronting China, and there seems to be no other method of dealing with it than to appoint a specially equipped Inspectorate-General with adequate powers of administration.

CHINA'S RAILWAY ACCOUNTS

Dr. Adams, the American expert engaged by China to organize a unified system of accounting for railway purposes, has returned to Peking to continue the excellent work which he and the Commission appointed for the purpose inaugurated

last year. The conferences held when Dr. Ad ms was last in China resulted in the adoption of rules for the classification of capital expenditures; for the treatment of new lines and extensions and of additions and betterments; for the classification of operating revenues; for the classification of operating expenses of railways; for the income, profit and loss and the surplus appropriation accounts, and for the classification of the general balance sheet accounts of railways. The work now to be undertaken will be the unification of station store accounts, which is designed to prevent what is commonly known in China as "squeezing," and the preparation of a system for annual scientific statistics. With the completion of the work now contemp'ated China should have the most thorough railway accounting system in the world. All that is needed to make it effective is consistent enforcement of the system by the Government, and it is to be hoped that the wisdom of persistency in that regard will be realised by the Government.

THE OIL RESOURCES OF CHINA

Hopes were entertained that the negotiations which were carried on in Peking for some months between the Chinese Government and the Standard Oil Company would reach finality early in August. This expectation, unfortunately, has not been fulfilled, and there seems to be little likelihood of any agreement being reached in the immediate future.

The negotiations were based upon an agreement* signed on February 10, 1914, between the Republic of China and the Standard Oil Company for the exploitation of oil fields in Shensi and Chihli. In accordance with this agreement the Company was to send experts to make a thorough investigation of the Yenchang, Yenanfu and adjoining fields in Shensi and the Chengtehfu and adjoining fields in Chihli, the cost to be borne by the Company and the Government jointly. If these investigations showed that the fields could be worked with advantage, an American-Chinese Corporation was to be formed. The capitalization was to be 55 per cent. Standard Oil Company and 37½ per cent. Chinese Government, the 37½ being payment by the American-Chinese Corporation for the franchise. The Chinese Government was also to have the option of purchasing the remaining 7½ per cent. of the capital stock at par within two years of the formation of the Corporation. The Government agreed that the working of petroleum in the fields named should be exclusively entrusted to the American-Chinese Corporation to develop, refine and market for sixty years. If the fields examined proved to be worthless, other districts might be exploited. A clause provided that a royalty not exceeding 1.5 per cent of the value of crude petroleum at the place of production should be paid to the Government. For one year after the signing of the agreement no concession of petroleum-bearing properties in any part of China was to be given to foreigners.

A party of experts and the necessary machinery were sent from America, and after delays from various causes a thorough examination was made of the oil-bearing districts in Chihli and Shensi.

The agreement between the Chinese Government and the Standard Oil Company expired on February 10, 1915, but, as arrangements for the formation of the American-Chinese Corporation had not been made at that date, the Chinese Government has from time to time extended the agreement. Latterly the negotiations have been conducted on behalf of the Standard Oil Company by Mr. W. E. Bemis, one of the Vice-Presidents of the Company. Agreement was found to be difficult with regard to several points in a new proposal made by the Standard Oil Company. Proposals for refining and marketing were unacceptable to the Chinese Government as they deemed them to be a departure from the original agreement, and to be in the nature of a monopoly, and accordingly counter-proposals were made. These, in their turn, did not prove acceptable to the Standard Oil Company and, for a time at all events, a deadlock has been reached.

It will be sincerely hoped that some satisfactory solution of the difficulty will be found possible. At the present time it is all important that no opportunity should be lost of developing China's resources, and the fact that the Standard Oil Company was willing to enter upon the negotiations may be accepted as a proof that the investigations that have been made showed that the Shensi fields at least are worth exploitation. In the interests of all concerned it is to be hoped that it may be found possible to proceed with the development of these fields, as the benefit accruing would be shared by the whole country and not solely by the districts immediately concerned.

* This agreement was published in full in the February, 1914, issue of the FAR EASTERN REVIEW.

LAND TAXATION IN CHINA

Some little time ago we briefly described the measures that were being taken to reform the system of land taxation in China. While the necessary investigations will take a considerable time and general reform will be a matter for the future, some steps have already been taken that will have the effect of increasing the revenue from this source. Immediately after the Revolution the land tax machinery was working very badly. The provincial authorities in many instances collected the revenue on their own account, and in some cases the tax was decreased or abolished. As soon as the Central Government were in a position to do so they restored all the customary levies and charges and instructions were issued that the land tax should be collected in silver coins instead of taels or cash. The practice that had formerly prevailed of permitting the provincial authorities to deduct from the amount raised the cost of collection was abandoned. In many instances the cost of collection was out of all proportion to the total amount raised, consequently the provincial authorities were directed to meet this cost out of other provincial revenue.

As a result of these measures the Ministry of Finance in 1914 received an appreciable sum from land taxation. Some provinces remitted over $1,500,000 more than had been received the previous year, and the saving in the cost of collection, which was added to the national revenue, was about $2,000,000. When the survey that is now being undertaken is completed it is expected that the revenue will be greatly increased. Until a proper survey has been made it will be impossible for the Government to put into force uniform regulations, and consequently collections will continue to be made at the varying rates that at present prevail. An equitable system of grading lands and the adoption of uniform rates of taxation are expected to result in doubling the revenue from this source. Moreover the survey will result in revenue being derived from much land that now escapes taxation. Previous surveys were very carelessly made, and the landowners were frequently able by corrupting the officials entirely to escape taxation. Even when the land had been surveyed with approximate correctness the owner was often able to evade the tax. So much corruption prevailed that wealthy landowners were able to induce the tax-collectors to leave them unmolested and to endeavour to make up the deficiency in the revenue by extorting a double tax from those who were too poor to obtain exemption by bribery. While it is impossible to ascertain with any degree of exactitude the extent to which this practice was carried on, it is certain that it was widely prevalent in the past and that there was much consequent loss of revenue.

With proper organization and honest administration it should be possible to obtain from the land tax a revenue equal to the total revenue from all sources now obtained by the Central Government. The estimated revenue from the land tax in 1913 was about 82 million dollars, about a quarter of the total estimated revenue. The land under cultivation in China was estimated in 1905 to amount to 650,000 square miles or about 400,000,000 acres. Taking the revenue at $82,000,000 the tax is twenty cents Mexican currency per acre. Of course the productive capacity of the land varies greatly in different parts of the country and its value is affected by facilities for

transportation of produce and so forth. These differences would preclude the imposition of a uniform tax, but the assumption that the landowners could bear a tax that would average $1 per acre seems to be justified. Direct taxes are always unpopular, but as China is debarred from increasing her Customs duties she has no alternative. A tax that averaged $1 per acre would probably not be found oppressive if the original valuation of land were fairly made and nothing beyond the assessed tax extorted by the collectors. However, to render the tax acceptable to those who pay it, the Government will have to exhibit a willingness to recognise its obligations to a greater extent than in the past. Taxes are levied to provide the Government with the funds necessary to give security to life and property, and to carry on the administration of the country for the benefit of the people. The landowners would pay their share more contentedly if they knew that their lives and property were thereby given proper protection and if roads, railways and canals were constructed or extended to afford them greater facilities for marketing their produce. The Republican Government have succeeded in restoring order throughout the country and may be said to be thus fulfilling the primary duty of every Government. Reasonable security for life and property has been afforded. As the revenue grows so should the efforts of the Government to improve the transportation facilities increase. Expenditure of part of its revenue in this way will be not only beneficial to the landowners but will increase the capital value of the land and, as periodical revaluations will undoubtedly be made, the future revenue will also increase. There is reason to suppose that the Government are fully seized of these facts, and that increased revenue from land taxation so far from causing an additional burden to be laid on the people will result in an appreciable improvement of their condition.

THE TSINGTAU CUSTOMS

The negotiations in regard to the control of the Chinese Maritime Customs Office at Tsingtau have terminated in a manner more satisfactory than was expected. It will be remembered that when Kiaochou was surrendered the Japanese Military Authorities took over the civil administration at Tsingtau and also the Maritime Customs Office. The original agreement for the establishment of a Maritime Customs Office at Tsingtau was signed at Peking in 1899 by Sir Robert Hart, then Inspector-General of Customs, and the German Minister. This agreement provided that the Customs Commissioner at Tsingtau and the members of the European staff of the Customs Office should be of German nationality. An amendment of this agreement was signed in 1905 by which the Chinese Government agreed to hand over to the German officials at Tsingtau 20 per cent of the net import duties collected as its contribution to the expenses of the territory.

Relying upon the repeated assurances of the Japanese Government that the territory of Kiaochou was to be handed back to China, as soon as things settled down in the port, China notified Japan that she proposed to appoint a Customs Commissioner at Tsingtau, the gentleman selected being the British Commissioner at Mukden. To this Japan at once entered an objection. China then nominated the Japanese Commissioner at Soochow for the post, with a British Deputy Commissioner, but Japan again objected. With a sincere desire to meet Japan's wishes China was prepared to eliminate the British Deputy Commissioner, but this proposal was rejected. Finally China nominated Mr. Tachibana, the Commissioner at Dairen, to the post at Tsingtau. This was regarded as unsatisfactory by Japan and the counter-proposal was made that Japan should appoint the Commissioner and staff from the Japanese Customs Service. It was, of course, impossible for China to agree to this remarkable proposal as it would have involved permitting a foreign Power unwarrantably to interfere with her domestic administration, and would have meant the injection into China's Customs Service of foreign officials who in many cases would have taken precedence over men who had served China long and faithfully. To overcome the difficulty China suggested that Mr. Tachibana should be appointed Commissioner and that eight members of the Imperial Japanese Customs Department should be permitted to join the Chinese Customs Service in the lowest grade. This further concession was rejected by Japan.

The negotiations dragged on throughout December, 1914, but in January the notorious twenty-one demands swept smaller questions into oblivion. The Tsingtau Customs matter was not taken up again until July, but in the interval Japan appears to have recognised the wisdom of moderation. On August 5 an agreement was signed by Mr. Aglen, Inspector-General of Customs, and Mr. Hioki, Japanese Minister in Peking, which provides:—First, that the Chinese Maritime Customs shall resume its functions at Tsingtau; secondly, that business shall be conducted, pending a settlement of Tsingtau affairs after the war, in accordance with the arrangements made with Germany, except that Japanese officials shall be employed instead of Germans; thirdly, that the Japanese military government shall hand over the Customs property, archives, and funds, etc., acquired at the time of the occupation of Tsingtau, and fourthly, that the Japanese military government shall hand over the revenue collected since the occupation, less the proportion due to the local government in accordance with the arrangement made with Germany.

There is also an arrangement for increased Japanese representation in Customs Service.

This settlement of a question in which highly important considerations were involved will be welcome. If Japan had persisted in her original demands she would have found it difficult to defend her action. The Chinese Maritime Customs Service, though largely officered by foreigners, is a portion of China's domestic administrative machinery. The nomination of officials to posts is a prerogative of the Inspector-General, who is responsible to the Chinese Government, and it would obviously lead to the utter disorganization and demoralization of the service if foreign Powers were permitted to control his actions. The service of much of China's indebtedness is provided by the Customs revenue, and the Powers interested would be greatly perturbed if control of the Customs service were to be regarded as a prize of war. It is understood that Japan is dissatisfied with the amount of representation given to her in the Maritime Customs Service, and that she considers that as she is second in the China trade she should supply a larger proportion of officials. The argument is specious enough, but Japan should not forget that any proportion of officials to trade must be very rough and ready and should certainly not be based upon results of martial operations. If Japan were engaged in a war with a great naval Power and the Japanese flag was swept from the seas, would she contend that as her trade with China had ceased all Japanese officials in the Chinese Customs should be dismissed? It would be most highly regrettable if the Chinese Maritime Customs Service were to become a plaything in international politics, and Mr. Aglen is to be congratulated upon preventing the recognition of a principle the adoption of which would certainly lead to disaster.

RAILWAY CONSTRUCTION AND THE WAR

One of the results of the European war is the practically complete stoppage of all railway construction in China. Dependent as they are upon foreign loans for this important work the Chinese Government are unable to proceed with the internal development of the country unless the foreign financial markets are open to them, and the result of the upheaval in Europe is that China must stand still so far as railway expansion is concerned until long after peace is established. America can and may step into the field, but for some reason difficult to explain the capitalists of that country have never evinced any particularly keen desire to participate in the great developments proceeding in China. There are opportunities for them now, and judicious procedure might easily land for them a line or two which Continental powers now heavily involved in war might be only too glad to hand over.

At present the work on the Pukow-Sinyang railway, being financed by the British, is being closed down. The whole of

this route—some 250 miles—has been surveyed, the plans have been completed, and nine miles of earthwork have been constructed. Unhappily the loan for the construction of the line was not floated before the war began, and the work so far done has been carried out upon advances made by the British and Chinese Corporation.

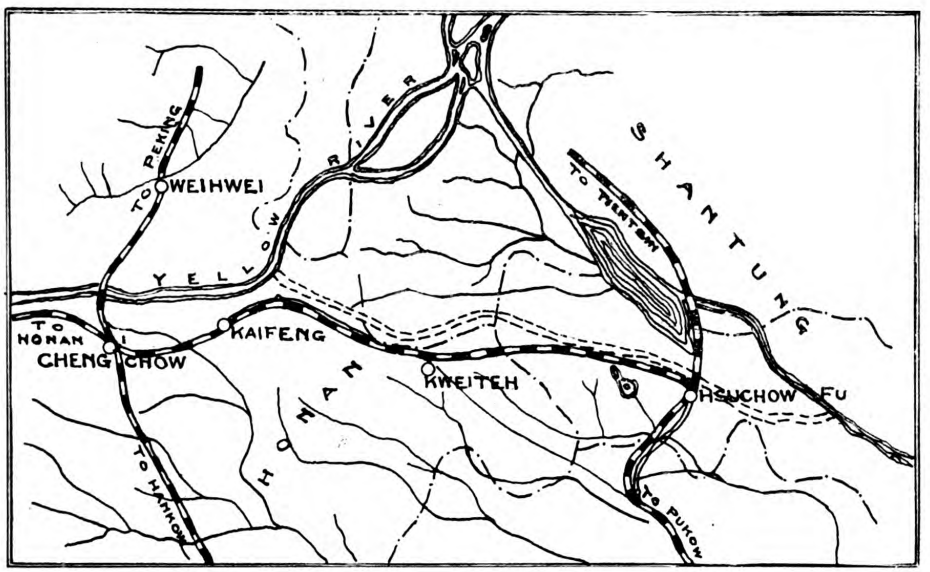
The survey of the projected railway between Nanking and Pinghsiang is being continued but when completed about June next, operations will cease unless conditions have materially changed and money is available.

On the railway under construction between Lanchow and the sea, work is being carried on in a desultory manner upon finances derived by a local Chinese loan. The section connecting Kiafeng and Hsuchowfu, on the Tientsin-Pukow Railway, has been practically completed and traffic is now being carried upon it, and the Managing-Director of the line is making brave efforts to have work to the west of Honan continued despite the war.

wagons being of the type used on the Peking-Hankow railway. Workshops are situated at Chinchow and Hsuchowfu. Construction was begun in the spring of 1914 and was finished in June of 1915.

The Pukow-Sinyang Railway

As mentioned above, work on the Pukow-Sinyang Railway has been temporarily suspended, though an effort was made to finance continued construction by floating a loan in China. Negotiations between the British and Chinese Corporation, Ltd., the concessionaires for the railway, and the Government resulted in no agreement being arrived at on the subject and it was dropped. It was suggested by the financiers that a silver loan of some $12,000,000 should be raised in China, the original sterling advances made by the financiers to carry out the survey, etc., totalling some £200,000, also to be converted into silver; the whole to be redeemed at a later period by a Gold loan to be floated to complete the construction and equipment of the railway.



THE NEWLY CONSTRUCTED RAILWAY FROM KAIFENG TO HSUCHOWFU

On the Shasi-Shingyifu line, a portion of which has been surveyed, work has been definitely suspended until after the war; and on the lines from Tatung to Chengtu, and from Yamchow to Yunnan and Chungking, nothing has yet been attempted, and cannot now be attempted until the financial sky materially clears.

Operations are still continuing on the extension of the railway from Kalgan to the Yellow River, via Tatung. The money now being used was derived from a local loan, but it will be insufficient to carry construction work far, and a stoppage will have to be made unless further funds can be raised.

The Kaifeng-Hsuchowfu Line

As mentioned above the connexion has been made between Kaifeng and Hsuchowfu, thus creating a link between the Peking-Hankow and the Tientsin-Pukow railways. The route follows the embankment of the old bed of the Yellow River over a total distance of about 200 miles, and is free from any engineering difficulties whatever. In fact it is almost perfectly level. The total waterway on the line is 4055 metres, comprising 89 steel bridges, of a total of 3315 metres, and 5260 culverts measuring a total of 740 metres. The gauge is the standard; the rails are 85lb Hanyang steel; and the sleepers are partly Belgian steel and Japanese timber. There are ten stations on the line, and ten flag-stations. The locomotives, of which there are six, are of French and Belgian pattern, the cars and China objected to a suggestion that the silver loan should be redeemed as soon as a gold loan should be raised in the future, though she expressed readiness, we understand, to redeem the silver loan in a specific number of years. China appears to have balked at the double discount that would come to the Banks as a result of the manoeuvre, it having been proposed that the silver loan should be issued at a discount and be redeemed at par upon the issue of the gold loan. As an alternative China suggested that a silver loan should be issued as part of the sum called for in gold in the original agreement, the term of the silver loan to be forty years, and the security to be similar to that called for in the original agreement with interest at 6 per cent., while the discount suggested by the financiers was accepted by China. The parties could come to no agreement on the question, and it was ultimately decided to suspend operations.

CHINESE EASTERN RAILWAY CAR SHORTAGE

The dearth of goods cars along the Chinese Eastern Railways continues, most of them being requisitioned by the Government to convey supplies from Vladivostok to Western Russian bases. These return with wheat, etc., which is being shipped to France. Many local importers, who have been waiting in vain for goods due at Vladivostok from Harbin, are now having them re-shipped by steamer to Dairen and from the Japanese port by sail to Harbin.

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Chefoo-Weihsien Line.—The Chinese Chamber of Commerce at Chefoo estimates that the cost of the Chefoo-Weihsien railway will be about Tls. 10,000,000, without counting a branch line from Lungkow to Weihsien. Telegrams have been despatched to the various provinces regarding raising of funds and it is expected that Chinese merchants in Shantung and the Chambers of Commerce throughout the republic will subscribe. The Central Government probably will advance Tls. 5,000,000. Directors of the Chinese Chamber of Commerce at Chefoo are consulting the leading merchants at Chefoo, Tsinan, Chowtsun and other Shantung cities, to find out what amount they will subscribe. It is understood that the Government intends to make the line a semi-official one. Chinese reports state that the Chefoo Chamber of Commerce at first approached the leading British merchants of Chefoo but the Japanese opposed their participation on the ground that, if foreign capital is required for this railway, the preference must be given to the Japanese.

British Railway Concessions.—According to a London Dispatch Lord Robert Cecil, Under-Secretary of the Foreign Office, stated that no agreement existed with China regarding Railway development by British subjects or with British capital, though agreements signed with British syndicates were communicated to the British Legation in Peking. The Chinese had promised, he said, that certain railway concessions, for which a British subject was negotiating, whether granted to that firm or not, should be reserved for British subjects.

In view of the foregoing, the Japanese versions emanating semi-officially from Tokyo may be of interest.

The statement of Lord Robert Cecil in the House of Commons refers to the line between Nanchang and Canton. However, the British people are trying to secure a line between Hangchow and Nanchang and Wuchang also, which fact is worth noting. Lord Robert Cecil, the Under-Secretary of the Foreign Office, has stated in the House of Commons that certain railway concessions in China would be reserved for British subjects. This is believed to refer to the railway concessions which, it has been reported, Messrs. Pearson and Company had contracted for, namely the railway line between Canton and Nanchang. However the line between Kiukiang and Nanchang as well as that between Chaochowfu and Swatow are built with Japanese loans and it is not morally good to grant the line between these two railways to another foreign concessionaire, and it is argued by the press of Tokyo and diplomatic circles in Tokyo that the British Government will pay due respect to the position of the Japanese Government in the matter.

Shantung Railway Repairs.—The repair work of the Shantung Railway, which has been going on since last winter is now completed and the time occupied between Tsingtau and Tsinanfu soon will be shortened about an hour; Owing to a freshet which carried away the Railway bridge between Fangtzu and Tsoshan, July 27, the goods traffic was interrupted and the new schedule deferred.

Chinghsien-Dolonor Line.—According to a Consular report the Chinese Government is planning to construct a railway from Chinghsien to Dolonor. A party of officials from the Ministry of Communications has been sent to survey the projected line. It is said that the line will comprise a distance of 1,100 li, and that a certain foreign bank has offered to loan the funds for the construction.

Railway to Yunnan Mines.—Plans for a railway from Mengtze, Yunnan Province, China, to the Ko-chiu tin mines, are nearing fruition as the Chinese capitalists concerned in the tin mines have recently employed two French engineers in connection with the enterprise. The original plans and the actual location of the line were made by American engineers, who resigned several months ago. The plans call for a 60-centimeter track, and rolling stock estimated at 8 locomotives, 100 freight cars, and 15 passenger cars.

Canton-Kowloon Railway.—According to the annual report of the Kowloon-Canton Railway, British Section, presented to the Legislative Council, the general development of traffic on the railway, with additional locomotives and rolling stock, made the extension of the locomotive and carriage accommodation at Hunghom, a necessity. It was found that the present site was capable of expansion sufficient to serve for many years to come, a definite scheme was drawn up, and it was arranged to carry out only so much of it as was immediately necessary. These extensions include the re-arrangement of the tracks, and an order for the necessary points and crossings and permanent way has been placed through the Crown Agents. The gross earnings for the year were $364,608.32, as against $333,633.32, for 1913, an increase of $30,975. The working expenses amounted to $274,366.39, an increase of $28,557.81 due to the increased price of coal. The balance after paying working expenses stands at $90,241.93, or $2,417.19 more than the previous year. No accidents occurred during the year.

Canton-Hankow Railway.—The line at present is almost completed as far as Shiu Kwan (Chiu Chow), 140 miles from Canton, and it is expected that traffic soon will be opened with that place. The work of the last 20 miles has been delayed two years beyond the time originally planned on account of heavy rock cuts, tunnels, and troubles with the contractors. The revolution also caused considerable delay.

Beyond Shiu Kwan station the only work which has been completed is about 3 miles of grading piers for the bridge over the North River (East Fork) at Shiu Kwan, and part of a long tunnel about 12 miles beyond Shiu Kwan. It is not likely that the Kwangtung Yueh-Han Railway Co. will build any further unless it is decided to open the coal mines north of Shiu Kwan. Beyond Lok Cheong (170 miles from Canton) the line runs through rugged country, and will have no local traffic until Ping Shek, on the Hunan border, is reached. It is expected that the Government will take the line from Shiu Kwan to the Hunan border.

The construction of the line is of fair quality. Eighty-five pound rails of American, Belgian, and Hankow manufacture are used. Steel girders and trusses are nearly all from the American Bridge Co. and are of the best design and workmanship. Some of these articles, purchased from Europe, are of poor design, and one 200-foot span is very bad. The locomotives are products of the Baldwin and the American Locomotive companies. Last year five consolidated locomotives were purchased—three from the American Locomotive Co. and two from the Baldwin. The passenger cars are mostly of American manufacture, as are also the box cars, although some of the latter are of English construction. It seems likely that the short English cars will soon be rejected and that only the 8-wheel American cars of all classes will be used.

Some steelwork, such as tanks, turntables, warehouses, etc., has been imported from America, and much Oregon pine for false work, ties, etc., has been and is being purchased there, but these articles are usually placed by Japanese, German, or English firms, for the reason that the American manufacturers are not adequately represented at Canton.

The passenger traffic represents about 60 per cent. There is also a good business in the transportation of cattle, firewood, limestone, and other products, such as rice, tobacco, poultry, etc. Later on coal will be brought down, but as this is anthracite, it will be necessary to establish a market before it can be handled. Salt is sent over the line from Hunan and the upper North River districts. On the whole, the traffic is satisfactory, and a large increase is expected when the line reaches Shiu Kwan, but the railway can not be expected to pay well until it has been completed to Hankow or Shanghai, when it should be the most important section of the railway and the most profitable in China.

The line is well located, fairly well constructed, very well maintained, and should be profitable if well managed.

The country through which this railway passes produces mules, cattle, pigs, rice, lumber, coal and a considerable quantity of tobacco and poultry. At Ho Tow are large limestone hills, also many mines, some supposed to produce silver and gold.

Japan's Five Concession Lines.—The railway concessions acquired by Japan by virtue of the recently concluded Sino-Japanese treaty consist of five new lines, namely Changchun-Chaonan line, Chaonan-Jehol line, Ssupinghai-Chaonan line, Haiyuan-Hailung line and Hailung-Kirin line. On the conclusion of the detailed arrangements, the work of construction will start with part of the Ssupinghai-Chaonan line, extending for 52 miles between Ssupinghai and Tingchiatung. The construction fund is to be defrayed by the Yokohama Specie Bank and construction work will be taken up by the South Manchuria Railway Company. The next line to be constructed will be that between Haiyuan and Hailung.

Chinese Railway Mileages.—The mileage of the Tsin-Pu, Ching-Han, Peking-Mukden, Peking-Kalgan-Suiyuan and Shanghai-Nanking Railways are as under:—

Tsin-Pu Line, 682 miles including 54 miles of branch lines;

Peking-Hankow Line, 829 miles including 70 miles of branch lines;

Peking-Mukden Line, 603 miles including 79 miles of branch lines;

Peking-Kalgan-Suiyuan Line, 215 miles including 13 miles of branch line.

Shanghai-Nanking Line, 203 miles including 10 miles of branch line.

S. M. Railway Material.—The British Consul at Dairen has furnished the following statement showing the values of the railway

supplies purchased from foreign countries by the South Manchurian Railway Company during 1914; the figures for 1913 are added for purposes of comparison:—

		United Kingdom.	United States.	Germany.	Other Countries	Total.
Iron, steel, &c.	1914	27,519	11,651	—	6,032	45,202
	1913	48,185	1,854	583	442	51,064
Timber	1914	—	380	—	1,946	2,326
	1913	—	19,746	—	1,727	21,473
Machinery	1914	15,270	7,596	14,515	410	37,791
	1913	43,494	12,302	45,354	172	101,322
Rails and accessories	1914	5,401	—	—	10,970	16,371
	1913	2,564	5,247	5,457	378	13,646
Locomotive and rolling stock construction material	1914	9,266	3,765	94	—	13,125
	1913	24,317	27,260	12,978	2,756	67,311
Electrical apparatus	1914	601	655	32,417	128	33,810
	1913	7,132	280	14,139	135	21,686
Building materials	1914	1,025	399	—	—	1,424
	1913	14,341	7,678	803	—	22,822
Oils	1914	—	21,491	—	319	21,810
	1913	—	16,976	—	473	17,449
Sundries	1914	14,836	10,956	2,516	3,265	31,573
	1913	69,877	1,097	3,966	194	75,134
Totals	1914	73,918	56,893	49,542	23,070	203,423
	1913	209,910	92,440	83,280	6,277	391,907
					(C.I.B.	29,780.)

S. M. Railway Doubles Track.—The South Manchuria Railway has received permission to double the track on the Suchiatun-Mukden Section on the Main Line. This construction work will extend over four years. The construction of a railway bridge for the second track over the Hun River is in progress.

S. M. R. Traffic Returns.—For the first time in the new fiscal year, the South Manchuria Railway's traffic returns have showed a decrease from the returns for the corresponding period of last year. The daily average for the first decade of the current month was Y35,568, being Y392 less than the figures for the same period of last year. The total traffic receipts from April to August 10th reached Y8,059,440.29 and the excess over the last year's earnings to the end of July was Y1,077,609.81.

Amur Railway Open.—Rails were joined at Oblutchye, and traffic opened on the western section of the Amur Railway, the first train passing through in March. The work of completing the line is progressing satisfactorily.

New Philippine Railroad.—A new railroad corporation, capitalized at P500,000, has been incorporated in Manila to build and operate a narrow gauge road in Occidental Negros, from the port of Pulupangdan to La Isabela, a distance of some 60 kilometers. The company, called "Ferrocarril Agricola Pulupangdan-Isabela," is the first ever organized by Filipino capitalists for a like purpose. The road will pass through La Carlota, La Rama, Zaragoza, La Granja, Danao, and Castellana. The company reserves the right to engage in general and agricultural and passenger transportation by rail, as well as to operate boats for sugar export from any port in Negros to Iloilo. The capital stock of P500,000 is divided into 2,500 shares of P200 each, and 500 shares have already been subscribed for by the incorporators, while P25,000 in cash has been paid in. Eusebio Lopez is treasurer with offices at Iloilo until the line is in operation. The railroad will pass through a fertile region yielding at least 70,000 tons of freight per year, to be increased as further sugar acreage is developed. The estimated population is 110,000.

Manila Railroad Interest.—Business depression in the Philippines contributed to the falling off of revenues on the northern lines of the Manila Railroad company while the rice crop failure of last year and the September floods are held responsible for the decrease shown in freight earnings on those lines for 1914, were points emphasised by Governor General Harrison in a statement explaining the causes which have led to the necessity of meeting guaranteed interest charges on railroad bonds from government funds. Though not the first time in the history of the Philippine government, the four per cent interest guaranteed on bonds of the Manila Railroad company is being paid by the government and the total amount probably will reach P80,000. According to the statement, the year 1914 shows the greatest operation revenue on the northern lines in the history of the road with the exception of the year 1913. The falling off over 1913 amounted to P288,063.77. There was a falling off in freight earnings of P119,183.76, or approximately 9 per cent. There was a sympathetic falling off in passenger earnings of P164,358.21, or less than 8 per cent. At the same time, the operating expenses for 1914 exceeded those of 1913 by P100,706.84. The complete statement of comparative revenues and expenditures for five years follows:

NORTHERN LINES

	1910	1911	1912	1913	1914
Freight Earnings	849,886.61	968,877.40	918,389.33	2,272,544.92	1,153,361.16
Passenger earnings	1,600,006.22	1,807,828.18	1,981,122.09	2,138,828.73	1,974,470.52
Total operation revenue	2,494,785.60	2,780,931.66	2,925,171.04	3,440,812.11	3,152,748.34
Maintenance of Way and structure	315,341.59	414,365.57	391,866.06	442,802.92	443,204.49
Maintenance of Equipment	114,303.29	161,371.04	200,486.77	267,669.44	316,732.63
Traffic	31,833.66	32,463 66	27,828.33	30,530.17	33,494.74
Transportation	458,014.97	519,619.20	595,743.18	736,260.07	782,409.46
General	121,340.96	129,338.73	140,482.06	149,563.59	151,601.71
Total	1,072,974.47	1,257,158.20	1,356,407.30	1,626,826.19	1,727,533.03

SOUTHERN LINES

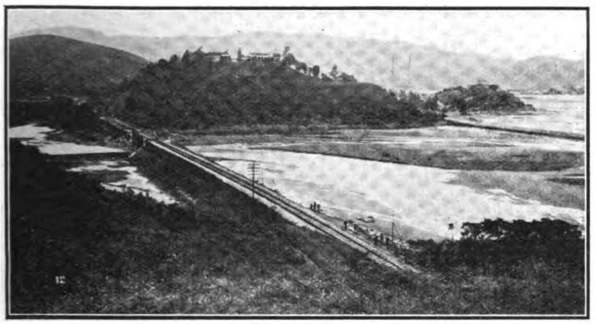
	1911	1912	1913	1914
Freight Earnings	176,634.78	340,157.31	448,432.15	538,996.72
Passenger Earnings	579,716.76	1,090,880.62	1,320,671.77	1,273,085.04
Total operating revenue	761,850.16	1,443,042.57	1,795,675.66	1,830,985.96
Maintenance of Way and structure	66,073.93	177,954.14	203,025.40	275,427.62
Maintenance of Equipment	37,625.60	88,112.72	117,133.46	166,228.82
Traffic	10,621.84	14,848.07	18,310.52	19,719.93
Transportation	147,624.23	318,827.62	482,606.38	536,179.69
General	34,051.90	68,435.54	92,395.16	95,461.86
Total	295,997.50	667,278.09	913,470.92	1,093,017.92

Indian Railways' Deficit.—The deficit in the earnings of State and guaranteed railways in India as between April 1st and June 10th has now passed the figure of Rs. 20 lakhs, and on other lines the deficit exceeds Rs. 10 lakhs, making an aggregate falling off of Rs. 30,75,594. The improvement in Oudh and Rohilkhand earnings now stands at Rs. 9,53,862; the East Indian receipts at Rs. 5,66,930, the next best record standing to the credit of the North-Western with an increase in earnings of Rs. 4,42,367. The deficit in the earnings of the Bombay, Baroda and Central India 5ft. 6in. gauge now stands at Rs. 6,73,355; to which must be added Rs. 7,95,543 in deficit on the 3ft. 3⅜in. gauge. In the week ending June 19th Great Indian Peninsula earnings show a slight improvement, but over the longer period the decreased receipts aggregate Rs. 8,25,993. The returns for Southern India reflect trade conditions not entirely uniform, South Indian receipts showing a decline of Rs. 4,49,968, not including reaction of Rs. 3,87,421 on the Travancore branch; the Madras and Southern Mahratta, on the other hand, claiming an improvement of Rs. 1,07,163, also showing improved earnings in the particular week under mention.

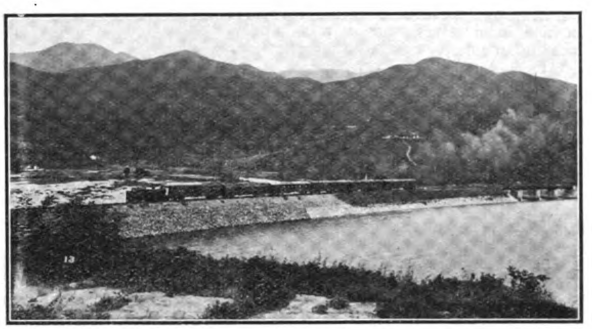
New Indian Railway.—The Kalighat-Falta Railway Co. has organized with a capital of 1,700,000 rupees ($551,536) to complete a 26-mile railway on 2½-foot gauge from Kalighat to Falta, Bengal. The line will be constructed and worked by Messrs. McLeod & Co., Calcutta, as managing agents under a board of directors and subject to close Government supervision. The line will run through one of the most densely populated parts of Bengal, the density of population being more than 1,100 per square mile. This is more than double the average density of Bengal which is 551 per square mile. The only present means of passenger transportation is by hackney carriage or on foot, and although the usual fare on Bengal light railways is 4 pies ($0.0067) per mile, judged by the third-class passenger traffic on other railways in India, the passenger traffic is expected to yield at least 6 per cent on the capital invested. Almost every foot of the ground through which the line runs is under cultivation, and as the only means of transportation heretofore has been the bullock cart, it is estimated that the freight traffic will be immense.

Bangkok's New Station.—The Bangkok terminal station of the Northern Railway has been under construction for several years, and a $44,400 contract has now been awarded for the final frontage buildings. With the completion of these structures, Siam will have one of the most up-to-date railway stations in the Far East. The contract was awarded to the Bangkok Dock Co. (Ltd.)

The work on the Southern Line of Railways is proceeding satisfactorily, and the final rails linking Singora with Bangkok were laid early in May, 1915. The line will be open for regular traffic in June, 1916.



CANTON-KOWLOON RAILWAY—CROSSING TIDE FLATS



CANTON-KOWLOON RAILWAY—EMBANKMENT APPROACH TO BRIDGE

KOWLOON-CANTON RAILWAY (British Section).

[ANNUAL REPORT FOR 1914 OF H. P. WINSLOW, MANAGER]

The foundations for the new Terminal Station at Kowloon were completed at the end of 1913 and in February of the year under review a contract was let for the Station Building. Satisfactory progress has been made by the Contractor, the building having approximately reached the first floor level. Orders for the necessary fittings and fixtures have been placed with the Crown Agents and it is anticipated that the Station will be opened for the use of the public by March, 1916.

Since the opening of the Railway, great inconvenience and no little anxiety has been experienced at Hung Hom where the connection to the shunting and loco yards joined the main line to the south of an overbridge approached by a sharp curve. This awkward arrangement has been changed during the year by the laying of a second line of rails between Kowloon and Hung Hom, thus relieving the main line between Kowloon and Yaumati of all junctions and crossings.

A starting signal interlocked with the movement of the points has been erected at Lowu, giving line clear to trains from the Chinese Section to the British Section main line.

The Platforms of the new Terminal Station were opened for traffic in April after receipt of the points and crossings from England, the track removed from Salisbury Road and the portion formerly used by the Railway handed back to the Public Works Department.

The Station Yard for the present consists of 12 roads converging onto 2 lines, one being the through or main line to Yaumati, and the second, the "empty" line to Hung Hom and the loco yard. These are temporarily controlled by a complicated system of point locks but an order has been placed through the Crown Agents for a proper system of signalling which will be operated from one signal cabin containing 72 levers, room for 8 additional levers being provided for future extension. The level crossing gates at Holt's Wharf will also be controlled by this cabin.

As pointed out in my Report of 1913 the embankments between mile 7½ and 14 were seriously damaged during the Typhoon of August 17th and it was decided that protection works of a more substantial nature were necessary along the coast line to avoid the risks of washouts. Good progress has been made since the work commenced in November and it is anticipated that before the next typhoon season arrives the necessary repairs will be practically completed.

Owing to the continual rise in house rents causing the Railway staff to be frequently seeking more reasonable accommodation and changing their residences, some even being forced to live on the island of Hongkong, sanction was obtained to erect blocks of quarters on Railway lands at Hung Hom for most of the European staff. Drawings and estimates were prepared during the year and contracts for the buildings have since been entered into and the work started.

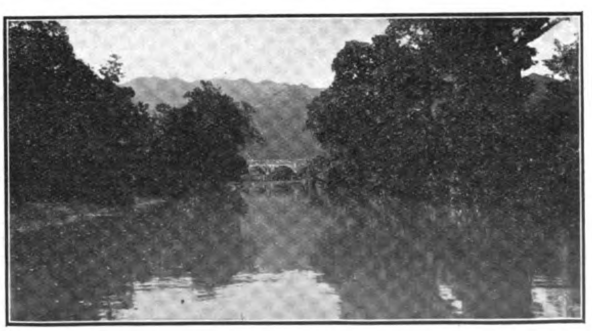
The general development of the Traffic on the Railway necessitating orders for additional locomotives and rolling stock made the extension of the locomotive and carriage accommodation at Hung Hom a necessity. The matter was given careful consideration and when it was found that the present site was capable of expansion sufficient to serve for very many years to come, a definite scheme was drawn up, and it was arranged to carry out only so much of it as was immediately necessary. These extensions include the removal of the old store and the building of a new one, which work was well in hand by the end of the year and has since been completed, the extension of the present paint shop as a locomotive running shed, the conversion of the present carriage running shed into a paint shop, and the building of a new carriage running shed capable of accommodating 2 trains of 8 coaches each, also the rearrangement of the tracks in the loco yard so as to come in with the new works and the scheme decided upon. An order for the necessary points and crossings and permanent way has been placed through the Crown Agents during the year.

On January 29th the crank axle of No. 2 locomotive broke when approaching Fanling station, fortunately without causing other damage. A new crank axle was supplied by the Hongkong and Whampoa Dock Company and the locomotive was again in service on March 16th since which time it has been working satisfactorily. Whilst waiting for the new crank axle the engine was given a general overhaul and repainted. This is the only accident of consequence to rolling stock during the year.

The locomotive ordered in 1913 arrived in the Colony in May and was erected and handed over to the traffic at the end of June. This engine has been fitted with mechanical lubricators to the cylinders and valve chests which have been found to be a great improvement. A Pyle electric head lamp has been fitted during the year to the locomotive used for night work.

One 30 ton wagon has been converted into a flat bogie. Eight Main Line coaches have been given a general overhaul and repainted and the erection of eight new coaches on underframes received at the end of the year has been commenced. Further orders were placed during

CANTON-KOWLOON RAILWAY—APPROACH TO KOWLOON



CANTON-KOWLOON RAILWAY—SCENE ALONG ROUTE

the year through the Crown Agents for three Main Line locomotives, four carriage underframes and one motor coach.

Fanling Branch Line.

Washouts occurred on the Fanling Branch Line in July and September, one owing to the bursting of village bunds which damaged some 800 feet of Railway bank and another caused by a sudden mountain freshet washing away the wings and approaches of a bridge over a stream. About ¾ of a mile of second hand 35 lb. rails have been purchased in order to release some 85 lb. rails which were temporarily laid in the road and were required at Kowloon, and many new intermediate sleepers were laid and bridges strengthened in order to carry the heavier class of rolling stock placed on the line during the year.

In December, 1913, six underframes were received for the Fanling Branch Line and on these underframes the following coaches have been erected:—One first class, one first and brake compo, one third and brake compo, and three thirds. The work was started in January and the coaches completed in March. The old coaches were condemned, some were sold and the underframes of others have been used to make steel sided wagons.

In April the 2 foot gauge No. 2 Hudswell Clarke loco was brought into the shops from Fanling and rebuilt. The frame of this locomotive has been lengthened by 1 foot 3 inches, a covered cab fitted in place of an open one and the couplings altered to the pattern of the new rolling stock on the narrow gauge branch line.

A revision of the Time Table was made early in the year and a night train service between Hongkong and Canton was inaugurated in March. This night service was continued until August 16th when the train was derailed at mile 19 on the Chinese Section by a gang of robbers removing two rails and attacking the train. After this incident it was decided to discontinue the night service. The day service has been maintained throughout the year with the exception of the period between July 11th and 24th when the through trains to Canton were suspended owing to floods which seriously damaged the line between Shek Lung and the former City.

Accounts.

The Expenditure to December 31st, 1913, on Capital Account was for the Main Line $13,459,227.43 and the Branch Line $62,004.13 making a total of $13,521,231.56. During the year under report further expenditure was incurred on works detailed in this Report amounting to $546,602.44 for the Main Line, which includes a debit for loss on Exchange of $194,847.04, and $27,826.69 on the Fanling Branch Line making a total of $574,429.13 for the year.

The Revenue Statements of Earnings and Expenditure take the usual form. The net result shows that against an Estimate of $271,209, the actual Expenditure was $274,366.39 an excess of $3,157.39 mainly due to an unexpected rise in the price of coal which could not have been foreseen at the time the Estimates were framed, and to increased train mileage. The Earnings were estimated to be $372,600 whilst the actual receipts amounted to $364,608.32 being $7,991.68 below the Estimate. It was only to be expected that the war would affect the passenger traffic, and this together with the unfortunate attack on the night train mentioned above no doubt had an adverse effect and in addition the train service to and from Canton was suspended for 14 days owing to floods. Though the Earnings did not quite reach the estimated figures, the local traffic has increased slightly and shows an excess of $2,174.94 over the previous year despite the fact that the customary movements of the troops in the autumn did not take place. The through traffic shows a satisfactory increase under the circumstances of $28,222.02. I regret that I am unable to report any considerable improvement in the Goods Traffic. A slight increase is shown in both Through and Local Goods, but though efforts have been made in all directions and enquiries have been received, for the reasons already stated in my Report for 1913, the receipts from this source have made no satisfactory progress.

The Working Expenses for the year are slightly higher than in 1913. It will be observed on reference to the figures that the Locomotive expenses are mainly responsible for this, the percentage under Abstracts B & C being 35.61 as against 30.39 for 1913, this as previously explained is mainly due to an unexpected advance of $1.85 per ton in the price of coal and to a smaller extent to additional mileage due to an improved Time Table.

The Gross Earnings for the year were $364,608.32 as against $333,633.32 for 1913 an increase of $30,975. The Working Expenses amounted to $274,366.39 an increase of $28,557.81 due as stated above to the increase in the price of coal. The balance after paying Working Expenses stands at $90,241.93 or $2,417.19 more than the previous year.

During the year the question of the division of the fares has continued to receive the attention of both Administrations and in August a decision was arrived at and the outstanding accounts between the two Sections, it is hoped, will be finally adjusted early in the ensuing year.

Accidents.

No accidents occurred to the travelling Public or to Railway servants during the year, but four Chinese were killed whilst trespassing on the Railway.

Staff.

During my absence on leave from April 8th to November 19th Mr. Robert Baker (Engineer of Way and Works) acted as Manager. Mr. G. A. Walker, Chief Storekeeper, was granted nine months' leave and returned to duty on November 19th.

CONSTRUCTION ACCOUNT—MAIN LINE

I. Main-Head.	II. Sub-Head.	III. ESTIMATES. 1913.	IV. Additions 1914.	V. Total.	VI. Expenditure to 31st December, 1914.	VII. Funds Available.
		$ c.	$ c.	$ c.	$ c.	$ c.
I.—Preliminary Expenditure,.....	Survey,.....	42,277.65	—	42,277.65	42,277.65	—
II.—Land,.....	Land,.....	2,669,758.45	4,801.57	2,674,560.02	2,254,880.13	419,679.89
III.—Formation, ...	(*a*) Earthwork,	2,587,580.00	168,551.73	2,756,131.73	2,596,526.54	159,605.19
	(*b*) Tunnels, ...	3,811,145.19	—	3,811,145.19	3,819,945 51	*8,800.32*
	(*c*) Roads,.....	120,200.00	5,787.66	125,987.66	126,672.02	*684.36*
IV.—Bridges,..	(*a*) Major,.....	816,495.41	—	816,495.41	829,047.22	*12,551.81*
	(*b*) Minor,.....	350,126.47	—	350,126.47	359,491.49	*9,365.02*
	(*c*) Culverts,.....	72,546.09	—	72,546.09	71,567.78	978 31
V.—Fencing,..	(*a*) Boundaries,.	39,999.45	8,493.22	48,492.67	44,486.33	4.006.34
	(*b*) Signs,.....	400.00	—	400.00	727.31	*327.31*
VI.—Telegraph,	Telegraph,.....	30,032.17	2,565.33	32,597.50	40,551.65	*7,954.15*
VII.—Track,.....	(*a*) Ballast,.....	130,066.54	3,000.00	133,066.54	175,630.99	*42,564.45*
	(*b*) Permanent Way,.....	702,885.71	16,000.00	718,885.71	812,742.46	*93,856.75*
VIII.—Stations & Buildings,	(*a*) Buildings & Fixtures,.....	308,800.00	411,000.00	719,800.00	314,107.05	405,692.95
	(*b*) Station Machinery,.....	40,000.00	28,280.00	68,280.00	36,145.36	32,134.64
	(*c*) Furniture,...	5,000.00	—	5,000.00	15,241.93	*10,241.93*
	(*d*) Workshops,	60,000.00	—	60,000.00	89,899.74	*29,899.74*
IX.—Plant,.....	(*a*) Construction,	101,884.53	—	101,884.53	167,336.84	*65,452.31*
	(*b*) Loco, Tools and Plant,...	50,000.00	—	50,000.00	68,775.91	*18,775.91*
	(*c*) C. & W. Tools and Plant,...	10,000.00	—	10,000.00	25.00	9,975.00
	(*d*) Engineering,	—	—	—	10.00	*10.00*
	(*e*) Loco Rolling Stock,.....	119,400.00	243,706.30	363,106.30	251,561.05	111,545.25
	(*f*) C. & W. Rolling Stock,...	302,540.00	217,541.20	520,081.20	426,424.39	93,656.81
X.—General Charges,.	(*a*) 1. Salaries and Allowances,	398,720.43	—	398,720.43	442,971.18	*44,250.75*
	2. Quarters and Offices, ...	88,495.13	—	88,495.13	113,457.39	*24,962.26*
	3. Instruments,	11,639.61	—	11,639.61	10,339.91	1,299.70
	4. Office Expenses,.....	32,710.93	—	32,710.93	34,770.98	*2,060.05*
	5. Medical,....	22,319.46	—	22,319.46	23,071.90	752.44
	6. Home Charges,.....	124,478.29	—	124,478.29	134,978.80	*10,500.51*
	7. Interest,...	713,922.67	—	713,922.67	701,705.62	12,217.05
	8. Exchange,	200,000.00	—	200,000.00	*282,257.14*	482,257.14
	(*b*) Accounts,...	42,843.53	—	42,843.53	41,222.35	1,621.18
S.S.,.....	Stores in Suspense,.....	—	—	—	241,494.53	*241,494.53*
		$ 14,006,267.71	1,109,727.01	15,115,994.72	14,005,829.87	1,110,164.85

N.B.—Figures printed in italics are minus quantities.

Column IV.—Additional work, rolling stock, etc., sanctioned; expenditure approved in Dec., 1914.

CANTON—KOWLOON RAILWAY. REVENUE ACCOUNT FOR THE YEAR ENDING 31st DECEMBER, 1914.

1913	Per cent. on Gross Receipts.	Expenditure	Amount 1914	Per cent. on Gross Receipts.
$ c.	%	*Main Line.*	$ c.	%
52,218.60	15.65	To Maintenance of Way and Works,	42,857.71	11.75
101,375.22	30.39	„ Loco, Carriage and Wagon Expenses, ...	129,861.27	35.61
39,550.99	11.86	„ Traffic Expenses, ...	46,234.00	12.68
41,534.58	12.45	„ General Charges, ...	40,422.17	11.09
42.90	.01	„ Special and Miscellaneous Expenditure, ...	...	...
		Branch Line.		
4,816.16	1.44	To Maintenance of Way and Works,	6,369.43	1.75
5,087.26	1.53	„ Loco, Carriage and Wagon Expenses,...	7,394.28	2.03
1,167.87	.35	„ Traffic Expenses	1,227.53	.34
...	...	„ General Charges	...	...
15.00	...	„ Special & Miscellaneous Expenditure, ...	...	...
245,808.58	73.68		274,366.39	75.25
87,824.74	26.32	„ Balance (Net Earnings)	90,241.93	24.75
333,633.32	100.00		$364,608.32	100.00

1913	Earnings	Amount 1914	Total.
$ c.	*Local.*	$ c.	$ c.
107,768.69	By Coaching Traffic	108,398.58	
8,692.86	„ Goods „	10,121.25	
12,744.93	„ Sundry „	12,861.59	
129,206.48			131,381.42
	Foreign.		
187,928.68	By Coaching Traffic	215,045.63	
9,585.91	„ Goods „	10,690.98	
...	„ Sundry „	...	
197,514.59			225,736.61
	Branch Line.		
6,444.10	By Coaching Traffic	7,018.14	
468.15	„ Goods „	472.15	
...	„ Sundry „	...	
6,912.25			7,490.29
333,633.32			$ 364,608.32

J. MORRIS,
Chief Accountant.

H. P. WINSLOW,
Manager.

Kowloon, April 14th, 1915.

EXPENDITURES. CANTON—KOWLOON RAILWAY

		Expenditure to 31st December, 1913.	Net Expenditure during 1914.	Expenditure to 31st December, 1914.
		$ c.	$ c.	$ c.
Preliminary Expenditure,	Survey, ...	42,277.65	.....	42,277.65
Land, ...	Land, ...	2,250,222.28	4,657.85	2,254,880.13
Formation,...	(*a*) Earthwork, ...	2,568,171.92	28,354.62	2,596,526.54
	(*b*) Tunnels, ...	3,806,982.63	12,962.88	3,819,945.51
	(*c*) Roads, ...	120,884.36	5,787.66	126,672.02
Bridges, ...	(*a*) Major, ...	829,047.22	.....	829,047.22
	(*b*) Minor, ...	359,491.49	.....	359,491.49
	(*c*) Culverts, ...	71,567.78	.....	71,567.78
Fencing	(*a*) Boundaries, ...	36,993.11	7,493.22	44,486.33
	(*b*) Signs, ...	640.31	87.00	727.31
Telegraph, ...	Telegraph, ...	37,767.34	2,784.31	40,551.65
	(*a*) Ballast, ...	164,399.50	11,231.49	175,630.99
	(*b*) Permanent Way, ...	786,792.16	25,950.30	812,742.46
Stations and Buildings,...	(*a*) Buildings and Fixtures,	240,360.17	73,746.88	314,107.05
	(*b*) Station Machinery,	32,994.95	3,150.41	36,145.39
	(*c*) Furniture, ...	15,099.13	142.80	15,241.93
	(*d*) Workshops, ...	88,713.39	1,186.35	89,899.74
Plant, ...	(*a*) Construction, ...	175,615.45	*8,278 61*	167,336.84
	(*b*) Loco, Tools, and Plant,	68,775.91	.....	68,775.91
	(*c*) C. & W. Tools and Plant,	25.00	.....	25.00
	(*a*) Engineering, ...	10.00	.....	10.00
	(*e*) Loco Rolling Stock,...	194,261.75	57,299.30	251,561.05
	(*f*) C. & W. Rolling Stock,	398,120.38	28,304.01	426,424.39
General Charges, ...	(*a*) 1. Salaries and Allowances, ...	441,035.17	1,936.01	442,971.18
	2. Quarters and Offices, ...	113,520.11	*62.72*	113,457.36
	3. Instruments, ...	10,449.91	*110.10*	10,339.91
	4. Office Expenses,	34,131.91	639.07	34,770.98
	5. Medical, ...	23,071.90	.....	23,071.90
	6. Home Charges, ...	134,978.80	.....	134,978.80
	7. Interest, ...	701,705.62	.....	701,705.62
	8. Exchange, ...	*477,104.18*	194,847.04	*282,257.14*
	(*b*) Accounts,...	41,222.35	.....	41,222.35
	Stores in Suspense,	147,001.96	94,492.57	241,494.53
	Total, ...	$13,459,227.43	$546,602.44	$14,005,829 87

N.B.—Figures printed in italics are minus quantities.

STATEMENT OF TRAIN MILEAGE

Main Line.

Year ending 31st December, 1913.	Particulars.	Year ending 31st December, 1914.
Miles.		*Miles.*
111,857½	1.—Train miles run for Public Traffic	138,966
6,528½	2.—Train miles run for Maintenance,.....	4,539
118,386	Total Train Mileage,...	143,505
75,882	3.—Miles of engines shunting and standing in steam for traffic purposes at 6 miles an hour, ...	106,590
.....	4.—Miles run for Loco purposes, ...	750
194,268	Total, ...	250,845

Fanling Branch.

Year ending 31st December, 1913.	Particulars.	Year ending 31st December, 1914.
Miles.		*Miles.*
23,021	1.—Train miles run for Public Traffic, ...	20,064
10,950	2.—Miles of engines shunting and standing in steam for traffic purposes at 6 miles an hour, ...	10,950
33,971	Total.....	31,014

ROLLING STOCK FOR THE YEAR ENDING 31st DECEMBER, 1914.

LOCOMOTIVE

Tender or Tank.	Type.	No.	Cylinder.	Pressure per sq. in.	Tractive Force.	Total Weight in Working Order.		Total Stock 1913.	Additions 1914.	Reductions 1914.	Total at end.	Actual Stock in running order on the last day of the year.	Repairs and Renewals. Repaired in 1914.	Renewed in 1914	Undergoing or awaiting Repairs at end 1914.	Average Number undergoing Repairs or Renewals at any one time.
					lbs.	Tons.	cwt.									
	Kitson															
Side Tank	2: 6: 4: 4′ 8½″ Gauge.	5	19″ × 26″	180	24,724	89	15	4	1	0	5	5	4	0	2	1
	Hudswell Clarke															
Saddle Tank	0: 6: 0: 4′ 8½″ Gauge.	2	14″ × 20″	150	10,604	29	7	2	0	0	2	2	2	0	0	1
	Hudswell C arke															
Side Tank	0: 4: 0: 2′ 0″ Gauge.	2	6″ × 10″	150	1,800	5	3	2	0	0	2	2	2	0	0	1
	Orenstein Koppel															
Centre Tank	0: 4: 0: 2′ 0″ Gauge.	1	9¾″ × 11¾″	150	4,338	10	0	1	0	0	1	1	1	0	0	0
	Wilson & Co.															
Loco Crane	0: 4: 0: 4′ 8½″ Gauge.	1	8″ × 10″	80	...	15	0	1	0	0	1	1	1	0	0	1
	Total.....	11						10	1	0	11	11	10	0	2	4

COACHING VEHICLES. 4′ 8½″ Gauge.

	No.	Length in feet.	Tare.	Capacity; Passenger.	Total Stock 1913.	Additions 1914.	Reductions 1914.	Total 1914.	Actual Stock in running order on the last day of the year.	Repairs and Renewals. Repaired in 1914.	Renewed in 1914.	Undergoing or awaiting Repairs at end of 1914.	Average Number undergoing Repairs or Renewals at any one time.
			Tons.										
First Class Carriage	1	60′ 11″	36	50	1	...	...	1	1	1	...	...	1
Second Class Carriage	1	60′ 11″	34	84	1	...	...	1	1	1	...	...	1
First and Second Composite Carriage	2	60′ 11″	35	68	2	...	...	2	2	2	...	...	2
First and Second Composite and Buffet Carriage	1	60′ 11″	35	60	1	...	...	1	1	1	...	...	1
Third Class Carriage	8	60′ 11″	32	120	8	...	...	8	8	8	...	...	1
Third Luggage and Brake	2	60′ 11″	35	84	2	...	...	2	2	2	...	...	2
Kitchen Luggage and Brake	1	60′ 11″	35	...	1	...	...	1	1	1	...	...	1
Total	16	...	...	...	16	...	...	16	16	16	...	...	9

2′ 0″ Gauge. COACHING VEHICLES

			Tons.										
8 Wheeled Bogie First Class Carriage	1	24′ 0″	3.5.0	16	...	1	...	1	1	1	...	...	1
„ „ „ „ „ and Brake Compo ...	1	24′ 0″	3.5.0	10	...	1	...	1	1	1	...	...	1
„ „ „ Third „ „ ...	1	24′ 0″	3.5.0	12	...	1	...	1	1	1	...	...	1
„ „ „ „ „ Carriage	3	24′ 0″	3.5.0	24	...	3	...	3	3	3	...	...	1
			Cwt.	Cub. Feet.									
Open Sided Carriages	...	9′ 0″	11	10	6	...	6	...	...	...	...	...	...
Total, ...	6	...	...	...	6	6	6	6	6	6	...	...	4

GOODS VEHICLES. 4′ 8″ Gauge.

	No.	Length in feet.	Tare.	Carrying Capacity (Tons)	Total 1913.	Additions 1914.	Reductions 1914.	Total Stock end 1914.	Actual Stock in running order end 1914.	Repairs and Renewals. Number Repaired 1914.	Number Renewed 1914.	Number undergoing or awaiting Repairs on the last day of the year.	Average number undergoing Repairs or Renewals at any one time.
30-Ton Covered Goods	5	35	15 5	30	5	...	...	5	5	5	...	...	1
30-Ton Rail Bogie	2	35	13 8	30	1	1	...	2	2	2	...	...	1
*30-Ton Open Goods	5	35	14 8	30	6	...	1	5	5	5	...	...	1
15-Ton Covered Goods	24	19	8 10	15	24	...	...	24	24	24	...	...	...
15-Ton Cattle Trucks	2	19	8 10	15	2	...	...	2	2	2	...	...	1
15-Ton Open Goods	10	19	7 16	15	10	...	...	10	10	10	...	...	2
15-Ton Goods Brake Van	2	19	15 ...	15	2	...	...	2	2	2	...	...	2
Goods Vehicles 2′ 0″ Gauge.													
Steel Sided Goods Wagons	3	9′ 0″	...	12 60 Cub Feet...	3	...	3	3	3	...	...	1	
Wooden Goods Wagons	...	9′ 0″	... 10	...	6	...	6	...	...	...	...	...	...
Total, ...	53	...	...	...	56	4	7	53	53	53	...	...	9

*One 30-Ton Open Goods converted into Rail Bogie.

COACHING TRAFFIC CANTON-KOWLOON RAILWAY.

— Single Fare per mile	1st Class. About 8 cents.		2nd Class. About 4 cents.		3rd Class. About 2 cents.		Total. 1914.		Previous Year.
I.—Passenger.	No.	Amount. $ c.	No.	Amount. $ c.	No.	Amount. $ c.	No.	$ c.	$ c.
Ordinary, ...	1,420	1,846.84	8,030	5,309.06	317,168	74,622,31	326,618	81,778.21	83,131.41
Government,...	530	756.65	2,358	1,519.55	7,303	2,615.30	10,191	4,891.50	5,868.75
Monthly, ...	35	970.35	51	687.48	439	3,088.27	525	5,646.10	3,554.37
Excursion, ...	4,168	6,228.75	4,457	3,949.65	5,891	3,460.06	14,516	13,638.46	11,876.55
Excess Fares	199	158.85	546	185.10	9,671	1,858.30	10,416	2,202.25	2,218.20
Total, ...	6,352	9,961.44	15,442	11,650.84	340,472	86,544.24	362,266	108,156.52	$106,649.28
Previous Year,	7,375	10,763.44	12,597½	9,805.77	330,392	86,080.07	350,364½	106,649.28	

Luggage fees, etc....	4,603.44	3,750.92
	111,352.72	110,400.20
Deduct payment to Star Ferry on account of Ferry Service	2,954.14	2,631.51
Total,...	...$108,398.58	$107,768.69
Next foreign Coaching Earnings	... 215.045.63	187,928.68
Total,...	...$323,444.21	$295,697.37

GOODS TRAFFIC

Particulars.	Current Year.	Previous Year.
Local Earnings		
General Merchandise,...Piculs.		
107,926.20	$ 8.985.38	$ 7,346.50
Government Stores,.....Piculs.		
4,934.58	623.44	696.45
Live Stock,.....Number		
2,333	512.43	649.91
Total.....$	10,121.25	$ 8,692.86
Foreign Earnings	10,690.98	9,585.91
	$ 20,812.23	$18,278.77

(16.75 Piculs are taken as the equivalent of a ton.)

SUNDRIES

Particulars.	Current Year.	Previous Year.
Rents of Land, House, etc.,	$ 9,574.14	$ 8,820.47
Rents—Stall Holders and Money Changers at Stations,	215.00	296.50
Hire of Engines and Wagons (Maintenance),	2,325.04	2,918.91
Water Supply to Steam Launches,.....	313.00	441.85
Proceeds by sale of Lost Luggage,.....	9.25	3.00
Privilege of Loading & Unloading at Stations,.....	264.00	264.00
Miscellaneous, ...	161.16	.20
Total,.....$	12,861.59	12,744.93

CANTON-HANKOW RAILWAY

Hupei-Hunan Section

Tenders are called for the supply of the following Steel Bridgework, viz:—

5	Dock Girders	15 — ft. Span.
8	do	20 — ft. ,,
18	do	30 — ft. ,,
6	do	40 — ft. ,,
18	Through Trusses	150 — ft. ,,
9	do	200 — ft. ,,

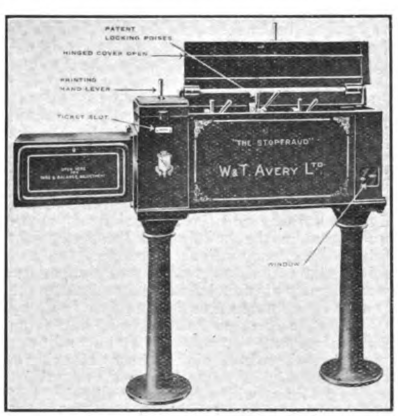
Forms of Tender, with Conditions of Contract and Specifications, can be obtained on payment of $5 at the office of the Director General, Han-Yueh-Chuan Railway Administration, Hankow, or on payment of an equivalent fee at the offices of the Railway's Consulting Engineers or Representatives in London, Paris, New York or Berlin.

Designs are to be submitted with each Tender, which must be on the official form supplied, in sealed covers marked "Tenders for Steel Bridgework, Canton-Hankow Railway, Hupei-Hunan Section," Addressed to the Director General, Han-Yueh-Chuan Railway Administration, Hankow, or, if abroad, to the Railway's approved Agents.

No Tenders will be received after 6 P.M. on the 7th December, 1915, when they will be opened in the presence of Tenderers or their Representatives.—Adv.

Important Improvement in Weighing Apparatus.

When one considers that practically every merchant's business calculations depend absolutely upon weighing accuracy for their success, it is a matter for surprise that the plan now adopted by the majority of leading British business houses, railways and Government Departments is not universally followed. Recognising that inaccurate weighments must inevitably lead either to loss of trade or to direct loss of profits, the keen practical business man has learned the wisdom of placing all his weighing apparatus under the care of one or other of the leading weighing machine makers, who periodically test, and where necessary adjust and repair any type and make under an annual maintenance contract. The loss in overweight required to turn a "stiff" weighing machine, may be, in itself, trifling, but the sum of these overweights will amount to a serious loss in a year.



"Stop Loss" Weighing Machine.

Another grave danger is the carelessness and, occasionally, fraud on the part of employees.

The machine here illustrated is the latest designed by the well-known and leading makers of weighing, counting and testing apparatus, W. & T. Avery, Ltd., of Birmingham, and is a device which prevents either fraud or carelessness. The "Stopfraud" apparatus is designed to print the weights on a ticket, the important point being that the ticket can be printed only if the weighman has obtained perfect equilibrium of the steelyard. If a weighman does not remove surplus weight the evidence of his carelessness goes upon record. In cases of repetition weighments the poises can be set, the machine locked and any untrained employee told off to check out any number of packages; it being quite impossible for overweight bags or lots to be sent out, since no ticket can be printed for weights that are even a fraction in excess of the variation allowed in setting the machine.

The method of working is shown in the illustration of the open machine. When the hinged cover is open, the printing hand lever is locked, and the ticket slot closed. By moving the patent locking poises along a fixed bar the concealed poises are shifted until the steelyard is seen at the window to be in equilibrium. The hinged cover is then closed and only when perfect balance is obtained, can one release the printing hand lever, and open the ticket slot.

It is not claimed that every refinement of the "Stopfraud" machine is required by every merchant who uses a weighing system in his business, but that with its various attachments the "Stopfraud" offers many advantages heretofore unobtainable, and that to many merchants, one or other of these refinements may be so valuable that the machine deserves the immediate and earnest attention of all who rely upon weighing as a means of putting their theoretical calculations into practical effect. Scalemaking being quite a special branch of engineering, the value, efficiency and convenient distribution of the Avery Service fully merits the appreciation it receives and the success it has attained.

Change in Goulds Selling Organization

The Goulds Manufacturing Company of Seneca Falls, N.Y., manufacturers of pumps for every service, announces a change in the management of its Sales Organization. Instead of having the entire organization in charge of a single executive, the selling work has been divided and is now directed by Mr. R. E. Hall, former Manager of the Boston Office, and Mr. W. E. Dickey, former Manager of the New York Office, both of whom are Vice-Presidents of the Company. Mr. A. H. Whiteside, former Sales Manager has resigned.

Mr. Hall, who is now located at Seneca Falls, has charge of the general work of the department and in addition looks after the business in all the Northern, Central West and Northern Pacific States including the territories of the Boston, Seneca Falls and Chicago Offices. The Export business is also under Mr. Hall's supervision.

Yokohama Building Y. M. C. A.

The Yokohama Young Men's Christian Association has concluded a contract with the American Trading Company, Tokyo, for a new Y. M. C. A. Building in Yokohama. The site was purchased some time ago at Tokiwacho, just opposite the Yokohama park. The ground contains 181 tsubo, for which the Y. M. C. A. paid 15,000 yen. The cost of the new building will be 58,000 yen and American business men have already pledged 70,000 for the new building and ground and a pledge of 14,000 yen has been given by Japanese supporters. Since the building, ground, equipment and maintenance will cost 122,000 yen, at least another 40,000 yen will have to be raised in Japan by the association.

The new building will be a five story structure of concrete. The kitchen and dining room will be on the ground floor. Shower baths and lockers are also provided on the same floor. On the first floor will be the social hall, labrary, billiard and music rooms. There will also be a public hall, a meeting room for general meetings and a gymnasium on the second floor. The third floor will be used for educational purposes. On the fourth floor will be a dormitory. The work of construction will be completed in May next.

THE CHANGCHUN-KIRIN RAILWAY AND ITS STRATEGIC MEANING

It is now exactly ten years ago since the Chinese Government decided on the construction of the Changchun-Kirin Railway in order to facilitate communication between the Capital of Kirin province and the other principal towns of the then Chinese Empire. The line has only been open to traffic for some two years, so that roughly it has taken eight years to get into working order a railway only 80 miles in length. Such a thing is only possible in China where forces are at work which defeat every known system of calculation.

The History of the Line

The whole history of the Kirin Railway discloses a pitiable tale of hesitation heavily interwoven with political intrigue. Some ten years ago a Chinese engineer was sent to Kirin and was instructed to collect material for the eventual construction of the Railway. He at once set to work purchasing large quantities of timber which is both abundant and cheap in these parts, but all these materials were either lost or destroyed when the Japanese became masters of the South Manchuria Railway and occupied Changchun. As the Chinese Government were then very short of funds, they consented to enter into an agreement with the Japanese Government by which the latter agreed to lend the new Railway Company half of the necessary capital, the yearly interest being fixed at 5 per cent. In return China agreed that the chief engineer and chief accountant should be Japanese. The chief engineer chosen was Mr. Magario, formerly of the Government Railways of North China, who was well experienced in engineering matters and methods in the North.

The Chino-Japanese Agreement of 1909

Even after this loan had been made things did not move very quickly and there was a great deal of chopping and changing with the directors, all of whom did not show much energy in pushing on construction. When in September, 1909, a new Chino-Japanese agreement was concluded which had special reference to the Korean-Chinese Boundary, the line was still in course of construction. Nevertheless in this agreement the Japanese secured China's consent that the Changchun-Kirin Railway should eventually be extended to the southern boundary of the Yenchi or Chientao district, connecting at Hoi-yang with a Korean railway. This extension was to be effected on the same terms as had been agreed upon for the Changchun-Kirin Railway. Even now the present railway, though in thorough working order, cannot be said to be thoroughly completed. A projected tunnel through the Tung Mung Ling has still to be built, the delay being caused by the want of capital, whilst several new bridges are also necessary on account of the floods which yearly take place in these districts and continually disorganise the railway traffic.

The capital expenditure on the railway is in round figures 5 million dollars, the Japanese having contributed some 2 million 200 thousand Yen, which is practically half the amount. According to returns furnished me the line is now self-supporting, and if it were not necessary to make further outlays in capital expenditure for the purchase of rolling stock, ballasting and general improvements, which—owing to the lack of any liquid funds—necessitates the disbursing of the monthly receipts, a profit would be made even when putting aside the interest payable on the Japanese loan.

The Traffic of the Railway

The highest monthly returns are $120,000 (during December and January) and the lowest $70,000, goods returns accounting for 65 per cent to 70 per cent of the total. The monthly expenditure is about $60,000 for purely running expenses and not including any sum set aside for payment of interest. In round figures the total returns for 1914 were $900,000 and the total running expenses $700,000. The smallness in passenger returns—from 30 per cent to 35 per cent of the total amount—demonstrates clearly that the population living in these districts is but small and that there is much land still to be opened up. The principal goods exported are timber in the summer months; and grain, cereals and tobacco in the winter months. This year there is a big falling-off in the export of timber; as last year all timber merchants had heavy losses, many becoming ruined owing to the floods and the carrying away down stream of innumerable rafts, which became flotsam and jetsam, lost forever to their owners. This year these dealers in timber have been unable to send even a quarter of the woodmen they usually dispatch to the upper reaches of the Sungari to hew trees which are at once cut into logs and bound together, the rafts being floated down stream as far as Kirin, where the Railway Co. has built a special siding close to the River bank to load this valuable cargo. Notwithstanding the small returns that are now shown by the Changchun-Kirin Railway, it is not a difficult matter to predict a very successful future for this line especially when the line becomes extended to the rich Yenchi district which lies some 800 li to east of Kirin and some 2 degrees south in latitude.

Possibilities of the Railway

Nobody knows better the possibilities of the railway and its extension than the Japanese themselves, for there have been for years past innumerable Japanese agents studying all conditions existent in this rich and fertile country and visiting even the most remote districts. It is interesting to follow step by step the deliberate manner of action of the Japanese, and it is not difficult to perceive that the object they have in view was born many years back and that each step taken has been caused by an opportunity presenting itself. Their first *pas* was to secure a share of the building of the Kirin-Changchun Railway and dates back soon after the signing of the Portsmouth Treaty. The second opportunity occurred in 1909 when the famous Chientao Controversy took place and when Japan acquired the substance for what she was fighting, although China gained a nominal diplomatic victory as a result of the Chino-Japanese Agreement that was signed stipulating for the extension of the Kirin-Changchun Railway to the southern boundary of Yenchi district and its connexion at Hoi-yang with a Korean Railway and the admission of Japanese capital in the building of the extension. When these negotiations were going on and before the actual agreement was signed, the then Viceroy of Manchuria telegraphed to the Peking Government pointing out that if China consented to the construction of a line from Kirin to Hoiyang—no matter what the conditions might be—the whole of Southern Manchuria would speedily be enmeshed in a network of Japanese lines whilst China would be left without any room for the construction of railways on her own account.

Russian Criticism

Russian special correspondents in the East for the more important Petograd and Moscow newspapers did not overlook the importance of the agreement that had then just been signed; they pointed out in very forcible terms that the construction of these railway lines gave a final preponderance to Japan over Russia in a strategical sense, which would enable Japan to pour an army through Northern Korea and Manchuria into the Ussuri district in a very few days, besides diverting freight from the Chinese Eastern Railway and Vladivostock to this parallel but more southern line terminating at the port of Chongjin in northeast Korea. The report made by the Vladivostock Bourse Committee to the Russian Government when this agreement of 1909 became a *fait accompli* was likewise a lengthy and remarkable document. It pointed out, without any mincing of words, that when once the projected line from northeast Korea, through the rich Yenchi district which lies adjacent to the Russian frontier to Kirin became an accomplished fact, the whole of the territory in the direct neighbourhood of this new Railway would fall *in toto* under the influence of Japanese enterprise. The third step taken in connexion with this railway coincides with the new Chino-Japanese Agreement in May last, when it was agreed that the Chinese Government would make a fundamental revision of the Kirin-Changchun Railway Loan Agreements, taking as a standard the provisions in railway loan agreements between China and foreign financiers and "when in future more advantageous terms than those in existing loan agreements are granted to foreign financiers in connexion with railway loans; the above agreement shall again be revised in accordance with Japan's wishes."

The Japanese Coup and Publicity

Though the demands accorded to the Japanese are much more moderate than the full text of Japan's ultimatum to China as officially announced by the Tokio Foreign Office on the 7th May and which read as follows, "The control and management of the Kirin-Changchun Railway shall be transferred to Japan for 99 years," nevertheless Japan has driven her wedge still further in as far as Central Manchuria is concerned, and no doubt would have driven it still deeper in had not the Chinese Authorities had recourse to the powerful medium of the Press. In the past and notably in the Antung-Mukden Railway Question, Chinese officials have shown their reluctance to appeal to the world in general through the Press, whilst on the other hand Japan, who invariably shows finesse in presenting her side of the case, has been able to drum up a fairly strong feeling in her favour in both England and America. China can only blame herself for having maintained silence, and as the experience has been dearly paid for let us hope that she has finally learnt her lesson.

"Reforms" in the Railway

The "reforms" that are to be introduced on the Changchun-Kirin Railway are likely to take place at a very early date, as the Treaty relating to South Manchuria came into operation on the 25th August. It is expected that, though the Chinese Director will still retain his place, the heads of departments will be replaced by Japanese and that these will be drawn from the present staff of the South Manchuria Railway; the present Traffic Manager, Locomotive Superintendent, Stores Superintendent being among those who will leave. Under the plea of effecting economy the present T'ou Ta Kon station, that is quite near the South Manchuria Terminus in Changchun, will be done away with and all trains will run into the South Manchuria Railway main line platforms. This being the case, the actual terminus of the Changchun-Kirin Railway will be transferred from the present principal Changchun station, which lies outside the East Gate of the native city, to the Japanese station at Changchun.

With the appointment of a Japanese Stores Superintendent, as is the case on the South Manchuria Railway, Japanese will receive preference when railway material and stores are required by the railway. A revision is also likely to be made in the present Railway Tariff and no doubt this Tariff will be drawn up from the S. M. R. model. The present Japanese Engineer-in-chief, Mr. Magario, is likely to be replaced by another Japanese engineer from the South Manchuria Railway, for the acting Director of the Bureau of Technics of that Co., Mr. Hori, has on several occasions shown himself not in accord with the work accomplished by Mr. Magario and has expressed his views through the medium of the Dairen Press as well as the Railway Organ published in the English language (the *Manchuria Daily News*), on the necessity of reconstructing all bridges along the Changchun-Kirin line. Both the Japanese in charge of the active management of the line will therefore be changed and it may be fully expected that construction work on the extension to Yenchi and the Korean frontier will soon begin, the line having been surveyed by the Japanese several years ago and once again only three years back, so that no further preliminary work in surveying is required.

Baron Nakamura's Visit

It is a significant fact that the Changchun-Kirin Railway is included in the Itinerary of Baron Nakamura, the Governor-General of Kuangtung Leased Territory, who is making a tour of inspection over the whole of the South Manchuria Railway System. It is a conclusive proof of how both this railway and Kirin are now interesting Japanese diplomats, and that the day is not far off before they pursue an active and forward policy in pushing their interests into the heart of these districts. Allusion must be made to a coal mine which is situated on the railway not far from the Yinchengtse station and owned by a Chinese Company who have been working it in a primitive manner. It is said to be a promising mine; but as is the case with most Chinese-owned concerns the amount of capital raised being totally insufficient for working in an intelligent manner, the Company has now come to an arrangement with Russian officials of Chinese Eastern Railway who are willing to advance a certain sum of money on the understanding that they shall have the option of buying all coal mined at a fixed price per ton, the mine not being far away from the Chinese Eastern Railway. A light railway can be easily built from the mine to a point on this Russian owned railway.

The present terminus of the Changchun-Kirin Railway is some 3 li outside the northeast gate of Kirin city. Between lies the newly-laid out foreign settlement where all foreigners will reside. A large bridge will have to be built to open the Sungari when once construction work on to Yenchi-Hoi-yong is started. The distance between Kirin and Yenchi is some 800 li from Yenchi to the Chinese side of the Tumen River opposite Hoi-yong which is already connected by a railway to Chhyongjin, the new port of Northeast Chosen. The new railway even before it is completed will be used to convey the native products of Yenchi to the port of Chhyongjin, which is admirably located and protected from the elements and is open all the year round, the anchorage being so good that vessels up to 10,000 tons displacement can approach close to the shore. Since 1909 the Japanese Government has assigned large sums of money amounting to some millions of Yen towards the improvement of the port which is likely to become not only one of the principal Korean ports but one of the world's trade ports. For, with the completion of the Kirin-Yenchi-Hoi-yang extension, all products from both Eastern and Northern Manchuria can be more advantageously shipped through Chhyongjin than through Vladivostock, Dairen or Newchwang. At Hoi-yang the Japanese Government have built enormous barracks and it is the Staff-headquarters for a brigade of Japanese troops. The distance from that town to Yenchi, the principal town of the Yenchi (Chientao) district, is about 100 li, and this is bound to play a big role in the future. It is daily growing in importance and has many Japanese subjects as residents, besides a Japanese and a Russian Consul. There is now also established there a Chinese Custom House, whilst many Kirin native hongs have opened branches there. The Chinese Post Office has a courier service which is maintained all the year round.

The Chientao District

The agricultural products of the Chientao district are estimated in millions of dollars and as there are still many uncultivated tracts of arable land, with the advent of the railway an increase in cultivation will only be a natural result. The country between Kirin and Omoso and from Omoso south-eastwards, is but sparsely populated and but slightly cultivated, principally on account of lack of means of communications. In certain parts the nature of the country is mountainous, so that for the first few years of the life of the new railway, no wonderful returns are likely to be made; the country however is full of possibilities, once properly populated. The soil is rich, admitting the sowing of all kinds of grains and cereals, whilst in the mountainous districts timber abounds. There are several smaller rivers flowing through all this part of the province, most of them being tributaries of the Sungari, the Nintan-Chiang (Hurka River) and the Tuimen, all of which admit cultivation in their valleys.

The whole future of these districts is full of possibilities that must not be overlooked, and which like the question of the waste lands west and north of Changchun should receive the instant attention of the Peking Government. *—By a Special Correspondent of the Peking Gazette.*

Gold Mining in Heilungkiang

The Chinese Government has decided to establish a Gold Mining Department in Heilungkiang (Manchuria) to take charge of the gold mining affairs in that province, this action being the result of a report by the Ministry of Finance to the following effect:

The Ministry of Finance begs to submit that by Article 9 of the provisional regulations of the Gold Mining Bureau the said Bureau shall establish branch offices at suitable places where an abundance of gold, silver, copper and other ores are produced. Now we have found that gold ore in the province of Heilungkiang is exceedingly rich. All the regions along the river from Chichienho on the north-west to Taipingkou on the south-east for a distance of several thousand li, are auriferous. There have been five gold mining yards, the Muho Yard, Kuma Yard, Kwantu Yard and Chichienho Yard, which are official concerns, and Chingkou Yard, a semi-official undertaking. The so-called official yards are really licensed private pits, which give a certain percentage of their output to the Government; and the semi-official yard is very much of the same character as far as the collecting of gold ore per capital is concerned except that at the beginning a certain amount of official funds was put in as capital and the yield is divided proportionately. During recent years the total annual output of gold exceeds 100,000 ounces, yet what the Government has been getting is very insignificant. The net profit from this source in the best year only amounts to about $400,000. It is a most regrettable fact that the miners sell their ore to a neighbouring country at very low prices, thus letting them make the profit which should belong to China.

Another fact is that the miners are allowed to open pits and no restrictions have been placed on them. The consequence has been that they seldom dig deep enough and change localities too often. As these primitive miners leave the waste sand piled up along the river beds the task of those who follow them is made very difficult. Within a few years, therefore, an excellent mining area may be rendered worthless. These conditions should, therefore, be immediately remedied by having special officials actually to control the operation. It is now proposed that a branch Gold Mining Bureau should be established at Heiho, a central locality in the province of Heilungkiang. We request that a Chief of this branch bureau be appointed to draw up a general plan for the whole area respecting the digging of sand, transportation and storage of foodstuff and improvement of blasting and refining. We also propose that a resident director be appointed constantly to visit the different mines and to be on the grounds so that he may supervise the works. If this meets with your approval the Ministry will at once instruct the officials so appointed to hasten to the said regions to establish the said branch office and take charge of the official yards. They shall also be responsible for the supervision of the operations in the semi-official yard at Yuchingkou so that effective reforms may be instituted.

As to the necessary steps to be taken after the establishment of the said branch bureau we beg to enumerate the following:—Encouragement should be given to the miners so that more and more men may offer themselves for the work; careful watch be kept in these regions so that all of the gold secured may be bought, improvements should be made to the pits already dug, and as to the more productive regions, regulations should be drawn up, waterways be opened and the area divided into lots and opened one by one so that the valuable regions may thus be protected and made to yield real profit. Experts in gold mining operations should also be sent to the various gold producing regions to prospect new mines and ascertain the practicability of working the mines partly by modern methods.

Respecting the foregoing the Ministry has instructed Chu Chao, formerly Chief of the Finance Bureau of Fukien, and Liu Wen-feng, the official specially sent to Heilungkiang to investigate into the gold mining affairs, carefully to consider them. If the methods stated above are carried out the receipts will be multiplied, and while the national revenue will be increased, a large quantity of gold will be kept in the country, a fact not a little beneficial to the currency system.

As regards the purchase of gold dust and the transportation and storage of food stuffs, a capital of $400,000 shall be needed. It is proposed that this will be raised in instalments from the 5 per cent of the receipts from official properties of Fengtien pledged by that province. Meantime the Bank of China will be asked to advance a loan for immediate requirements and to establish branch banks in the regions of Peiho, etc., for the circulation of paper money and the restoration of national rights. As to the provincial receipts from gold mining to the amount of more than $400,000, as provided in the estimate of Heilungkiang, the said province will be reimbursed this amount each year after the mines are transferred to the control of the Ministry of Finance, so that the administrative expenses may be duly met. Again, as these regions are far out on the border and are therefore wild in nature and cold in climate, the officials shall need the protection of troops and police. We request that the local officials be instructed to give adequate protection and not to adopt an indifferent attitude. As to the prevention of corruption, etc., the Chief of the Branch Bureau shall be held responsible, etc. . . .

The President' reply: The petition is noted. The proposal to establish a branch Bureau of Gold Mining in Heilungkiang is hereby approved. As to the request for the appointment of. . . . separate mandates have been issued. The rest shall be done as proposed; and the said Ministry shall advise the superior local officials of the province to order the troops and police to give the necessary protection.

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Hankow-Canton Line.—Considerable light upon the general railway situation in China, reviewed from a construction standpoint, is contained in a letter from an engineer employed in the survey of the American section of the Hankow-Canton system to Consul General George E. Anderson of Hongkong. This letter says:

"It is now quite certain that our section (the American section) will surely stop work in the near future. The British section (Kwangtung border to Hankow) and the German section (Hankow to Ichang) will both do some construction. The British will build from Hankow to Changsha (capital of Hunan Province), while the Germans will only build a feeder line (of about 75 miles) to the Peking-Hankow Railway. This is the final agreement between the Chinese Government and the bankers. The Hankow-Canton line must be built. Germans agree to give up their section if they could use the money now in the Hankow German bank to build this feeder line to the Peking-Hankow Railway, while the American section will be abandoned (of course due to lack of funds). Now all the loan will be concentrated on the British section and the Germans will get a small part of it to build a small line. So you see we shall have to quit here very soon. Just before the war we thought we were the luckiest ones among the engineers, for if this line is ever built it would mean a chance of a lifetime."

Business in some lines of railway material will have to be done on a considerable scale in the near future to maintain lines now in operation. The indications are that American manufacturers will have an especially favorable opportunity to secure much if not most of this business. Little may be expected in the way of new work.

Chinese Eastern Railway Forts.—The Tokyo Tsushin reports that the management of the Chinese Eastern Railway Company, with permission of the Russian government, has decided to build redoubts at Chanchun and other places where the railway has bridges, for the protection of the railway line.

Nanchang-Kiukiang Loan.—According to a Peking dispatch to the Japan Advertiser owing to disputes with a Japanese company over loans, the Government of China has appointed Mr. Shen Chao-chih chief director of the Nanchang Kiukiang line. The railway company owes a Japanese company said to be Messrs. Okuma Company 3,000,000 dollars. This is to be adjusted, otherwise the railway company will became another San Yeh Ping corporation in the Yangtze Valley. The government did not take over this line, but it wants to adjust its affairs without further delay. The Japanese want to control the financial department of the line as security for their loans.

Japan's Coronation Cars.—The freight cars now in general use in Japan are too small to carry the Imperial state carriages from Tokyo to Kyoto, consequently 26 new cars have been constructed at the Shimbashi railway works. A "trial loading" was held at Shiodome station with carriages sent to the station by the Imperial Household Department, and a trial run of the new freight cars was made between that station and Numadzu station. The total number of the freight cars to be used for coronation purposes by the Imperial Household Department is 550.

Japan Postpones New Railways.—In view of the steady reduction in the receipts from various sources, the Railway Board of Japan is reported to have decided to postpone planned works involving expenses of Y.3,000,000 during the present fiscal year.

15,000 Japanese Cars for Russia.—According to the Tokyo Nichi Nichi, the Russian government has placed an order for 15,000 railway cars in Japan. The Japan Car Manufacturing Company, the Osaka Car Manufacturing Company, the Kawasaki and the Mitsu Bishi Companies are conferring on the order. The manufacturers expect to prepare as many as their shops will produce and will ask the Imperial Railway Bureau to complete the order.

The maximum yearly production from shops of these companies and the Railway Bureau is far below the required number.

Yokohama to Buy Trams.—It is reported that a movement is afoot for the municipalization of the Yokohama tram service, which is now a private enterprise. At the special general meeting of the Yokohama Electric Railway Company, Mr. Sojiro Horiya, a large shareholder, urged that it would be more profitable for the shareholders to sell the plants and business to the Yokohama municipality. The municipality some time ago planned to purchase the plants and business of the present Yokohama Electric Railway Company, and also lay down new lines. The plan was dropped as the 50 yen paid up shares were quoted as high as 65 yen. The business of the company has not been so prosperous lately and the market value of the shares has now fallen to 39 yen. The municipal assembly will advocate the purchase but its realization is a question of time and money.

S. M. R. Traffic Returns.—The South Manchuria Railway Traffic Returns for the month of August total Y1,157,015.53, a daily average of Y37,323, which is an increase of Y1,070.62 over the corresponding period of last year. The total traffic receipts from April last to the end of August reached Y8,860,773.07 a net increase of Y1,110,799.

Railroad for Negros.—A corporation has been organized with a capital of $250,000, all private Filipino capital, to construct a railroad on the Island of Negros. The railroad will traverse the sugar district. Surveyors are already at work on the right of way. It will traverse the northern part of Negros between the port of Escalante, on the east, and Pulapandan, on the west coast. The entire cost of the line is to be $700,000 gold. At present the company is organized with a capital of $250,000, of which $150,000 has been paid in. As much construction work as possible will be done with the original capital, and then first and second class mortgage bonds will be issued to provide funds to extend the line.

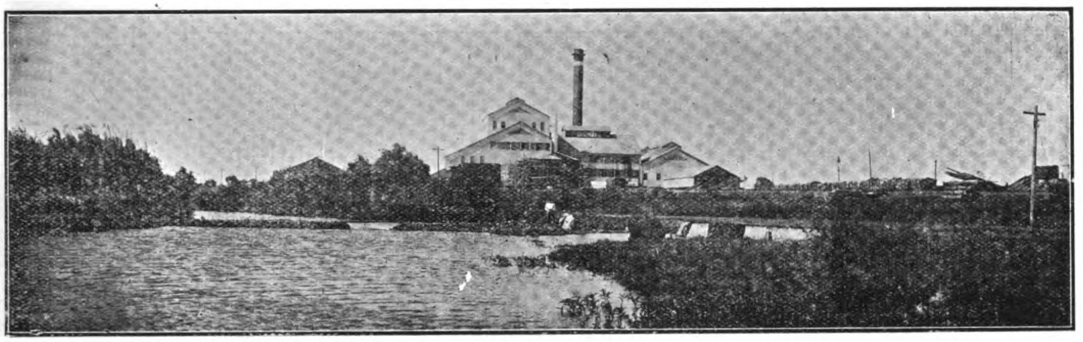
Australia's New Railways.—The Premier has received from the Director General of Public Works a memorandum respecting the areas of Crown land which the Government will be in a position to throw open upon the construction of the Mirrool-Hillston and Barmedman-Hillston lines of railway. The Director General states: "The two railway proposals are closely related regarding the country to be served. For the expenditure of $2,570,000 in the construction of 55 miles of railway (each proposal being 72½ miles in length) there would be available for closer settlement an area of 2,275,000 acres of Crown land. If, by the construction of these two lines, the Crown land is increased in value by $1.20 per acre, the amount would aggregate $2,750,000, a sum sufficient to pay for the cost of construction."

Indo-China's new Roadbed.—By decree of the Governor General of Indo-China dated May 25, 1915, a contract was approved with M. Emile Mayeur, entrepeneur, Saigon, for constructing the roadbed of the Pnompenh-Tonleap section of colonial route No. 1, a new road to be built from Saigon to Pnompenh, the capital and chief city of Cambodia. The contract price is 700,000 piasters (nearly $350,000). This does not include bridges, which are let by separate contract, but it does include culverts, the value of which is estimated at about $10,000. The country is low and marshy, and in construction of this road there will be more filling than grading. Most of this work will be done by coolie hand labor. The road will ultimately be built up with Bienhoa stone or native granite. Contracts for construction of bridges are let from time to time. Usually one or two months' notice is given in the local official publications to those who wish to submit sealed bids. The contracts are invariably granted to local firms. MM. Brossard et Mopin, entrepeneurs, Saigon, get most of the contracts. The country is intersected with arroyos, bayous, and canals, and subject to frequent inundations. Consequently many bridges are necessary and many of them must be long and strong. Those recently constructed have been of iron and steel, with foundations of reinforced concrete. Cement is one of the leading products of Tonkin, but the structural iron and steel must be imported. It has come mainly from France.

SHIPPING

New M. M. Steamer for China Run.—The Messageries Maritimes Co. has completed a new mail steamer, the André Lebon, for the China and Japan run. The new vessel's dimensions are: length, 538 ft.; breadth, 72 ft.; net tonnage, 10,260; gross tonnage, 22,000. It is a twin-screw steamer, fitted with quadruple expansion engines, developing 12,500 horse power and giving the steamer an average speed of sixteen knots. The accommodation for passengers is luxurious, with a spacious and magnificent dining hall, drawing and music rooms, passengers' elevators, children's recreation room, smoking and reading rooms, verandah-café, electric laundry, etc. The decorations are the work of the prominent French artist, Mons. Girette, the main staircase, or *escalier d'honneur* being a special feature. The André Lebon has accommodation for 200 first-class passengers, including four suites *(appartements de luxe)*, 180 second-class, and 110 third-class. The steamer will probably leave Marseilles for the Far East some time in October, or early in November.

T. K. K. to Canal Via Manila.—Manila is to have another new steamship line from New



SHAROKEN MILL OF THE TAIWAN SUGAR COMPANY

COMMERCE AND INDUSTRY OF FORMOSA

[BY CONSUL EDWIN L. NEVILLE, TANSUI]

The commerce of Taiwan (Formosa) will probably never be very extensive. The habitable land is confined to relatively narrow strips on each side of the island and a few river valleys. These areas, while fertile, are limited and are too small to support a large population. There are hardly any industries, and the mineral resources are confined to a few gold mines and some coal and oil deposits, none of which have as yet proved of great value. Silver and copper have been found in small quantities.

Population of the Island

The population of the island is estimated at 3,500,000. Of this number about 12 or 13 per cent live in towns of more than 5,000 inhabitants. These numbered 22 in 1912.

The central part of Taiwan, a mountainous district, most of which is not arable, is inhabited by aboriginal tribes, many of them entirely uncivilized. They number between 120,000 and 125,000.

Most of the imports are manufactured goods of one sort or another, or special articles of diet which appeal to the palates of the local inhabitants. The imports of manufactured goods consist of cloth, building materials, including iron manufactures and lumber, and chemicals and fertilizers of all kinds.

These imports are paid for principally by the export of rice, sugar, tea, and camphor. Sugar is a subsidized industry, the creation, so far as its present status is concerned, of the past few years. Camphor is a Government monopoly, instituted to prevent indiscriminate destruction of the camphor forests by private dealers. Most, in fact practically all, of the rice and sugar are sent to Japan. The United States is the largest consumer of Formosa tea and camphor, which are about the only articles exported to the United States.

Total Value of Trade of the Island

The total value of the trade of Taiwan for 1914 was $55,583,531, a decrease of $1,304,046 from the amount for 1913. This decrease has been constant since 1912, when the exports and imports reached some $62,000,000. The decline, so far as the year 1914 is concerned, appears exclusively in the total of imports, which amounted to $26,340,757 during 1914, against $30,305,148 during 1913. This diminution of imports is attributed to two conditions —curtailment of governmental activities here and an inability or disinclination on the part of investors to put more capital into enterprises.

Taiwan, from an industrial standpoint, is not at all developed. A large proportion of the imports in the past represented expenditures for public works or improvements and capital in the shape of machinery of various sorts for the development of local resources. A curtailment in the outlays of the local government will consequently show immediately in the dropping off of imports. This is a result of the absence of industrial plants of any kind.

Value of Exports Raised by Increased Sugar Price

Exports from Taiwan for 1914 show a gain of $2,660,345, from $26,582,429 in 1913 to $29,242,774 in 1914. By far the greatest part of this is due to increases in the value of the sugar exported.

Of the total trade of the island in 1914, $42,637,398 represents commerce with Japan, but much of it is in reality indirect trade with foreign countries. Kobe and other Japanese ports offer special transhipping facilities for Taiwan. Merchandise is frequently shipped to Japan, sold there, and then exported. There is free trade between Japan and Formosa; Japan offers a wider market than this island, and there are excellent means of communication. A considerable portion of the import trade of Taiwan pays duty in Japan and appears as Japanese imports.

Shipping companies prefer in dealing with Formosa to transship at Kobe, as the Osaka Shosen Kaisha and Nippon Yusen Kaisha operate regular triweekly steamers between Japan and Keelung. Despite the extra distance, it is actually cheaper, in shipping from London or New York via Suez, to transship at Kobe instead of at Hongkong.

Formosan trade with Japan, which constitutes about two-thirds of the island's total,

KOHEKIRO MILL OF THE TAIWAN SEITO COMPANY

increased from $41,466,426 in 1913 to $42,637,398 in 1914, showing a net gain of $1,170,972. This is due to a gain in the value of the exports to these Japanese ports from $20,137,093 in 1913 to $22,777,582 in 1914. Imports from Japan showed an equally decided decrease, falling from $21,329,333 in 1913 to $19,859,816 in 1914.

The increase in exports to Japan was a result of the greater demand for raw sugar. The exports of this commodity rose from 136,618,136 pounds, valued at $9,708,581, in 1913 to 302,376,893 pounds, valued at $13,781,187, in 1914. This gain was offset to some extent by a decline in the export of rice to Japan, which fell from a value of $7,823,961 in 1913 to $3,446,661 in 1914.

There was a large increase in the quantity and value of the oolong tea shipped to Japan—412,067 pounds in 1913, with a value of $56,040, against 1,565,526 pounds in 1914, valued at $191,839. This total includes a large amount of tea later shipped from Japan to foreign countries.

Formosan bananas likewise seem to have found favor in Japan, as 19,449,117 pounds of them, worth $292,334, were shipped there in 1914, a gain of nearly 8,000,000 pounds in quantity and over $100,000 in value. Crude camphor shipments to Japan in 1913 were 602,120 pounds, valued at $180,376, and in 1914, 2,496,310 pounds, valued at $751,594. Japan now ranks next to the United States in receipts of camphor from Taiwan. It is quite probable, however, that some of this campho figures among Japanese exports.

The decrease of imports from Japan seems to have been general in character and not confined to particular items. The year has been a dull one commercially.

More Kerosene Oil Received from Japan.

One item of import from Japan showed a marked increase—kerosene oil. This amounted to 786,398 gallons, valued at $134,154, in 1913, and had risen to 2,119,340 gallons, valued at $310,133, in 1914. Japan now supplies nearly as much oil to this market as the United States and the Dutch Indies combined. Some of it is of fairly good quality, but the larger part is of low grade. Some of this oil is re-exported and some of it is used by local dealers to dilute and adulterate the higher grades of American and Dutch Indies oil.

Increased Trade with China.

Trade with China showed a gain both in imports and exports during 1914. The population of the island is almost completely Chinese in origin, and the commerce with China ranks next to that with Japan. It is special in character, being largely confined to articles of use to Chinese.

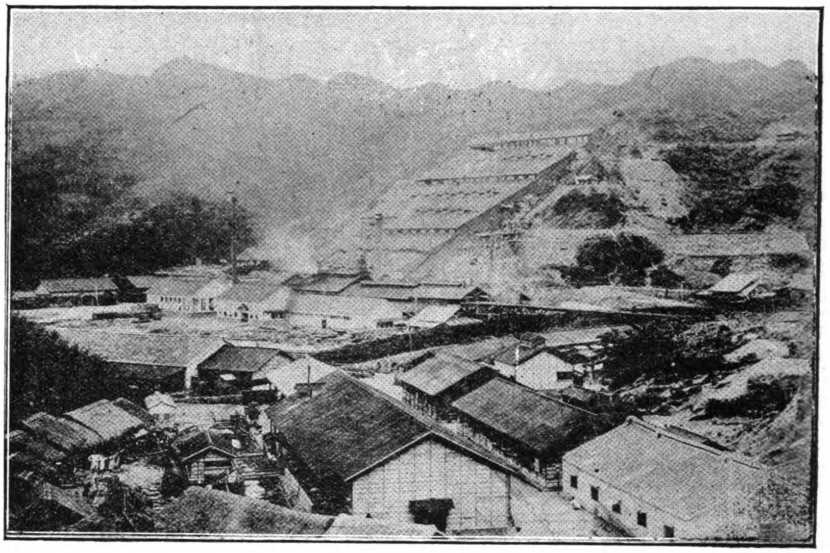
Most of it consists, on the import side, of Chinese paper, grass cloth, Chinese tobacco, imported by the monopoly bureau, bean-oil cakes, and Chinese drugs, fireworks, and the like. Exports to China are made up principally of China grass fiber, fish, matches (a re-export), pouchong tea, and kerosene oil.

The exportation of oil is a new development. In 1913 only 50 gallons were exported. In 1914 there were 1,003,640 gallons, valued at $124,350, sent to China. This oil is largely low grade.

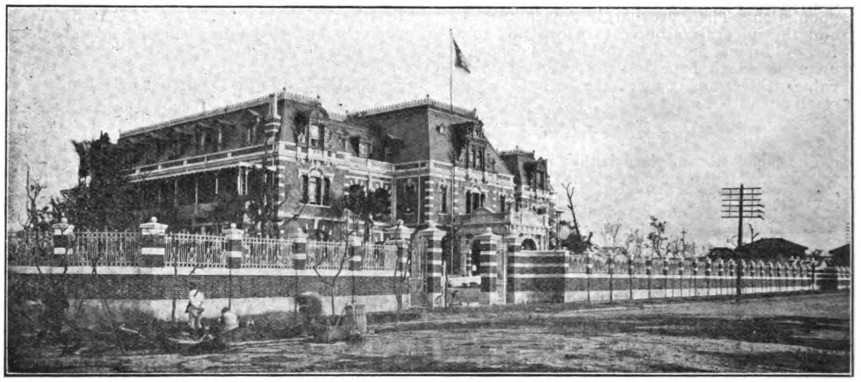
The total value of the trade with China was $5,372,042 (imports, $3,638,830; exports, $1,733,212) in 1914, compared with a total of $5,064,405 (imports, $3,610,870; exports, $1,453,535) in 1913.

Trade with United Kingdom and Germany.

Trade with the United Kingdom showed a decrease of $225,866 in imports and $216,843 in exports, the total decreasing from $1,308,782 (imports, $862,323; exports, $536,459) in 1913 to $956,073 in 1914. The decrease in imports was general in character. The decline in exports was due to lessened purchases of camphor and tea.

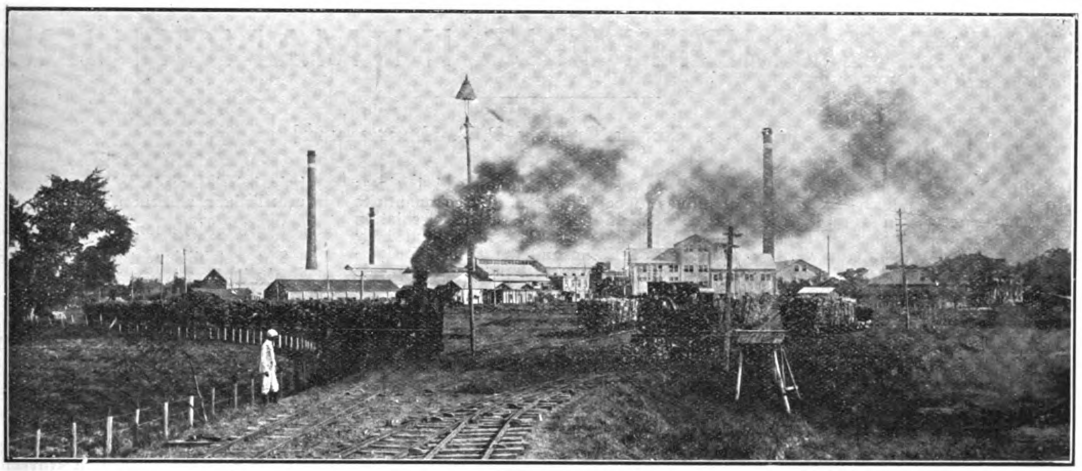


THE ZUIHO GOLD MINE IN FORMOSA



DAIHOKU STATION ON THE IMPERIAL TAIWAN RAILWAYS

RURUN STATION ON THE IMPERIAL TAIWAN RAILWAY



KYOSHITO MILL OF THE TAIWAN SUGAR COMPANY

Despite the war, imports from Germany show only a small falling off from the figures of 1913 ($264,112 in 1913, against $260,499 in 1914), while exports to that country show an actual gain ($371,074 in 1913 and $460,149 in 1914). Imports from Germany, like those from other European countries, are of a general nature and have never been very large. The exports to Germany consist almost completely of crude camphor.

Decreased Camphor Shipments to United States.

Exports to the United States, as shown by invoices certified at this consulate, amounted to $3,361,894 in value in 1914, as against $3,420,140 in 1913, representing a decrease of $58,246, due to a decline in the value of the exports of crude camphor. The export of this commodity to the United States fell from 3,616,935 pounds in 1913, valued at $1,168,340, to 3,496,969 pounds in 1914, valued at $1,048,418. The price of crude camphor has decreased from 78 yen ($38.84) per picul (133⅓ pounds) in 1910 to 72 yen ($35.86) per picul in 1914. This decline in price, as well as some of the decline in quantity and value of the article shipped to the United States, is said to be due to some extent to the development of synthetic-camphor manufacture in the United States.

The only other important article of export to the United States was oolong tea, which showed an increase both in quantity and value. The declared exports of this article in 1913 were 14,920,330 pounds, valued at $2,249,313, and in 1914, 15,398,066 pounds, valued at $2,312,401.

There was one shipment of Formosa hats valued at $241. It seems unlikely that this trade will ever amount to much. At one time there seemed to be a possibility that the Formosa hat would be a competitor of the Panama variety, but it has never been possible to secure any uniformity of grade. Shipments of this article have never resembled the samples.

Decreased Imports from United States.

Imports from the United States were $629,796 in 1913 and $398,646 in 1914.

The decrease in imports appears chiefly in kerosene oil, flour, condensed milk, and materials for railway construction. The decrease in the last-mentioned item is explained by the fact that no new railway construction of importance was undertaken here during 1914; the only activity in this line was the opening of a small private road between the towns of Nanto and Shoka, a distance of about 25 miles, in the west central portion of the island, which took place early in the summer.

Condensed milk imports are given as $139,912 in value, of which $66,492 worth are credited to the United States. The imports of this article in 1913 were valued at $166,560. Of this amount the United States was credited with $90,454. Condensed milk imports from Japan amounted to $73,389 in 1914 and to $76,088 in 1913. Imports of flour fell from $836,808 in 1913 to $664,457 in 1914. Practically all of this amount appears as a Japanese import.

While it is probable that most of the flour and much of the condensed milk imported from Japan are transhipped American goods, it is none the less true that both these comestibles are manufactured to some extent in Japan, too. Japanese condensed milk retails here for 26 and 28 sen (about 13 or 14 cents), while the imported article can not, in view of the duty (yen 5.55, $2.76, per picul, 133⅓ pounds), be retailed for less than 30 sen (about 15 cents) per tin.

Flour prices can not well be quoted at this time of varying values. The import duty on wheat is 77 sen (38 cents) per picul and on wheat flour yen 1.85 (92 cents) per picul.

Send Only Tea to Philippines

The only article of export to the Philippines was tea. Oolong tea to the extent of 7,861 pounds, valued at $1,263, and 193,589 pounds of pouchong tea, valued at $23,482, were sent to the islands in 1914. Both these figures represent a slight gain.

Pouchong tea, which is merely ordinary Formosa oolong with jasmine or other flowers mixed in for flavoring purposes, is a favorite beverage among the Chinese. The pouchong tea exported to the Philippine Islands is probably entirely consumed by the Chinese community there.

There were no declared exports to Hawaii or to Porto Rico.

Trade with Other Countries

Trade with the Dutch Indies is almost altogether confined to imports of kerosene oil and export of pouchong tea. As was the case with American oil, imports of kerosene from the Dutch Indies showed a considerable falling off (1,778,183 gallons, with a value of $215,802, in 1913, as against 1,301,473 gallons, with a value of $162,745, in 1914). Exports of pouchong tea to that destination, however, increased from 3,286,562 pounds, valued at $528,024, in 1913, to 4,116,698 pounds, valued at $668,115, in 1914.

Imports from Turkey and Persia consist completely—and from British India largely—of opium. The monopoly bureau's imports of this drug decreased from 372,467 pounds, valued at $1,879,338, in 1913, to 224,940 pounds, valued at $920,015, in 1914.

Rice and Sugar Market

Taiwan is dependent for its material prosperity on its agricultural products to a greater extent than in most cases. Contrary to conditions obtaining in many parts of the world, the main food crop, rice, has been so low in price that the farming population's income has been seriously affected. Increased prices for sugar and greatly increased sales of that commodity relieved matters somewhat.

Mount Ari Timber Project—Crude Petroleum

The Mount Ari timber project, the subject of frequent previous reports, has not yet proved a commercial success. The railway built to transport the logs from the mountains has entailed such large upkeep and repair expenses that it has been found difficult to market the finished lumber profitably at current prices.

The output of crude petroleum in 1914 is given as 641,763 gallons. It is all obtained from the vicinity of Byoritsu, where a refinery is situated. It is a low-grade oil.

The export of gold coins and bullion, practically all of the latter being from the mines of Taiwan, increased from $431,107 to $742,302.

The number of vessels that entered this port in 1914 was 393 and the total tonnage was 679,260, compared with 438 vessels, 792,724 tons, in 1913. There were 5 American vessels, 40,651 tons, compared with 8 vessels in 1913, carrying 65,280 tons. The number of British vessels was 20, with 63,602 tons, and the number of Japanese 358, with 558,847 tons.

MANILA HEMP CROP

That the Philippine Islands will produce approximately 40,000 more bales of hemp (abaca) this year than they did in 1914, when 967,000 bales were produced, is the estimate of Fiber Export Saleeby. Production estimates show a total of 1,030,000 bales, divided as follows: Albay, 230,000; Leyte, 260,000; Sorsogon, 135,000; Camarines, 115,000; Samar and northern Mindanao, 95,000 each; south Mindanao, 40,000; all other Provinces, 60,000. These figures include only new gradings up to December 31. It appears however, that prices are lower than usual, and despite the increased yield the crop will net some $2,500,000 less than it ordinarily would.

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

1000 Mile Track in Korea.—In Seoul, the completion of one thousand miles of railway track in Korea was celebrated recently by a ceremony held in Kyongpok Palace grounds in the presence of Prince Kan-in of Japan. It was attended by some 2,000 guests. According to the "Seoul Press" Dr. Ohya, Director of the Railway Bureau, made an interesting speech on the work of which he is in charge. He said the Seoul-Chemulpo line was the very beginning of the railway system and was first undertaken by Americans but later purchased by Japanese. In September, 1899, the section between Chemulpo and Noyangjin was completed and opened to traffic. During July, 1900, the remaining section from Noyangjin to West Gate Station was finished. In the meantime the Seoul-Fusan Railway Company came into existence, and in August, 1901, the Company started the construction of a railway between Seoul and Fusan from both termini. The property and interests of the Company were purchased by the Government two years later, but the Company continued carrying on the construction work under commission from the Government until it was completed in November, 1904. The total mileage of the line was 267 and it was opened to business in January, 1905.

On the outbreak of the Russo-Japanese War in February, 1904, Japan, under pressure of military necessity, at once started the building of a line between Seoul and New Wiju and the new line together with another military line from Samrangin to Masan was completed. In 1906 all the railways were transferred to the management of the Railway Bureau of the Residency-General. Since then railway building has been continuous and the Pyongyang-Chinnampo Line and iron bridge over the Yalu soon were completed. On the completion of the Antung-Mukden Railway connexion was effected between the railway system in Korea and Manchuria and the trunk railway in Korea became the shortest route from Europe and East Asia, the journey being much facilitated by the new harbour works at Fusan.

Among railway works undertaken since the annexation was the Hanam Line. Begun in October, 1910, and its trunk and branch lines, totalling 175 miles, were finished in January, 1914. No less important a work was the Seoul-Wonsan Line connecting the trunk railway with the eastern coast of the peninsula. It measured 138 miles in length and was finished in August, 1914. With a view to having a railway through South and north Hamkyong Provinces, a plan had been laid down for two local lines, one from Wonsan to Yanheung and the other from Chongjin to Hoiryong, and work was commenced last October, with the result that the section from Wonsan to Munchon (a distance of twelve miles) was completed on August 1 last. The total mileage of Korean railways has thus reached 1,006.

Count Terauchi, Governor-General, delivered an address in which he said he was determined to carry on the work just started as rapidly as finances of the Administration would allow, and effect a junction between with the Kirin-Changchun Railway. Engineering work in those regions was very difficult, for the region was hilly and several years would be required before the completion of the railway. The construction of various branch lines had to go on parallel with economical progress of the several localities concerned, and the day of completion of all of them he said would be very remote.

Japan Railway Board Wants Y40,000,000.—The Imperial Railway Board has been framing its own special budget to be introduced in the Diet this fall. A statement made by an official of the department, is that the whole expenditure for the second year of the seven year plan of improvement started last year, will be 40,000,000 yen. Of this amount, 10,500,000 yen will be devoted to construction work, and 29,500,000 yen for repair work. As for revenue, the board estimates that traffic receipts will amount to 121,700,000 yen, and miscellaneous receipts to about 2,500,000 yen, totalling 124,200,000 yen. Expenditures will amount to 106,700,000 yen, the balance of 17,500,000 yen, to constitute a net profit of the board. To this profit will be added 20,000,000 yen from the redemption fund. Then there will be about 2,500,000 yen which can be transferred for the use of the board making in all 40,000,000 yen.

Lines will be built as follows: 25 miles, between Hamada and Masuda; 88 miles, between Miyazaki and Saiki; 34 miles between Yamada and Suzaki; 19 miles between Yamagata and Sazawa; 87 miles between Otoineful and Wakanai.

Tsitsihar-Aigun Railway.—The construction of the long talked-of Tsitsihar-Aigun railway has been decided to be taken in hand early next spring as reported after a consultation of Military Commissioner Chu of Heilungkiang with the Chinese Government.

Shanghai Tramway Receipts.—The following is the traffic return of the Shanghai Tramways (Foreign Settlement) for September, 1915, and for nine months ended 30th September, 1915, with figures for the corresponding periods last year:—

	1915.	1914.
Gross Receipts	$120,421.54	$105,173.36
Loss by currency depreciation.	32,595.04	26,387.08
Effective Receipts ...	$87,462.50	$78,786.28
Percentage of loss by currency depreciation	29.00	26.87
Car Miles run	280,673	261,170
Passengers carried ...	5,452,242	4,671,457
	9 months ended 30th Sept., 1915.	9 months ended 30th Sept., 1914.
Gross Receipts	$980,259.54	$968,756.64
Loss by currency depreciation	263,531.04	229,671.20
Effective Receipts ...	$716,728.50	$739,085.44
Percentage of loss by currency depreciation	28.61	25.16
Car Miles run	2,481,568	2,489,371
Passengers carried ...	43,331,734	41,195,133

S. M. R. Traffic Returns.—The South Manchuria Railway Traffic Returns for the first decade of October give a daily average of Y42,803.63, being a decrease by Y6,314.69 from the corresponding period of last year. This decrease was due mainly to the backwardness of the new produce season. The total receipts from April to October 10th were Y10,471,932 and the net increase over the corresponding period of last year Y1,179,838.

The South Manchuria Railway Co. has received from the Japanese Government permission to double the track on the Suchiatun-Mukden section, a distance of about 10 miles, of the main line extending from Dairen to Chengchun. This work, which is merely an extension, as the line from Dairen to Suchiatun, 2,365 miles, was double-tracked several years ago, will consume over four years. The construction of a railway bridge for the second track over the Hun River is already in progress.

New Indian Railway Project.—The Mayurbhanj Railway Project is an undertaking to acquire the existing Mayurbhanj (Light) Railway and to provide funds for the extension of this line to Talbund. The length of the existing Railway is 32.41 miles of 2 feet 6-inch gauge connecting Rupsa on the Bengal-Nagpur Railway main line with Baripada, the capital of Mayurbhanj State. The length of the proposed extension from Baripada to Talbund is 38.69 miles, to make with the existing Railway a total length of 72 miles on the 2 feet 6-inch gauge.

The proposed extension will run mostly through low forest. An irrigation scheme is nearing completion, and already practically irrigates 10,964 acres. This should be completed during 1915. A further scheme is under contemplation which with the area already irrigated should command above 600 square miles; it is expected that out of this new area 180 square miles will be irrigated.

There are extensive forests beyond Baripada, the present terminus of the line, which have hitherto been practically unexploited owing to the prohibitive cost of carting.

One of the main objects of the extension is to provide an outlet for the large supply of excellent timber for sleepers and building purposes which the Simlipahar forest will supply. These forests are capable of producing 500,000 cubic feet of timber annually.

The extension will also render marketable other forest produce such as myrobalans, etc., which are not exported now, owing to the prohibitive cost of cartage.

Ninguta-Mulin Railway.—The question of laying a railway connecting the walled town of Ninguta with a point on the Chinese Eastern Railway had been pending for some time past. At the end of August the Chinese Guild made an attempt to bring the issue to a head. The question of choosing between the Ninguta-Hailin route and the other one passing through Mulin via Mutan Valley was finally decided in the latter's favour, principally from the consideration of lighter expenses required. The branch of the Frontier Development Bank opened thereat recently is said to have agreed to advance a loan of 100,000 roubles to the Chinese Guild for employment for the railway construction.

Siamese Railway Construction.—The budget estimates for Siam for the fiscal twelvemonth allocate $2,952,600 gold for further work on the extension of the Southern Railway, originally financed out of a loan of about $20,000,000, arranged with the British Federated Malay States. At first the intention was to construct a line running from Petchaburi southward down the east coast of the Siamese portion of the Malay Peninsula,

to connect with a British line on the eastern Patani-Kelantan boundary. Last year, however, the two Governments agreed to make a further connection on the Kedah border—a British Malay State on the west side of the Peninsula.

With reference to the call for tenders by the Siamese Royal Railway Department (broad gauge) for the supply and delivery of bogies and frames for rolling stock, the Acting British Consul-General at Bangkok now reports that the contract in question has been awarded to an American firm.

SHIPPING

New Chinese Shipping Line.—According to a San Francisco Special to the Manila Bulletin under date of October 12, the China Mail, a new steamship company, has been organized with a capital of $10,000.000, to engage in the trans-Pacific passenger and freight carrying trade. The organizers are largely Chinese, though it is said that there is some American capital in the enterprise and it was stated in San Francisco by Dr. Wellington Koo, Minister to Mexico, that Chinese banking interests were solidly behind the new company.

The China Mail has already purchased the former Pacific Mail liner China from the Atlantic Transport Company, and this steamer will leave San Francisco on Saturday, October 16, calling at Honolulu, Nagasaki, Manila, and China ports, as previous to the dissolution of the Pacific Mail. Negotiations have already been begun by the new company for the purchase of other steamers to be placed on the same run, and for the securing of a subsidy from the Chinese government. The avowed purpose of the new line is to take the place of the Pacific Mail on the Pacific Ocean.

The China is a vessel of 10.200 tons, she left Manila in September on her last trip as a Pacific Mail boat, on which line she has been for more than thirty years, making nearly 250 voyages.

China's River Navy.—The Chinese naval authorities have presented a scheme to build 20 or 30 shallow draft warships which will be distributed at important points on the coast and rivers. The President is said to have sanctioned the scheme.

New Tsingtau-Shanghai Service.—The South Manchuria Railway Company has decided to open a regular navigation service between Tsingtau and Shanghai beginning in October. The Hakushin Maru, of 2.000 tons, will be placed in this new service and will run once a week between the two ports.

New Line to U. S.—By the withdrawal of the Pacific Mail liners and the s.s. Minnesota from the trans-Pacific trade what little there was to represent the American Merchant Marine almost completely disappeared, leaving the American flag practically unrepresented, but still further, entirely upset shipping to the Pacific coast of America, as remaining carriers were already booked up in advance. Many shippers were very badly embarrassed. But Shanghai shippers are not to continue to suffer curtailment of business with America because of lack of ships, as a new trans-Pacific service is just being started by Messrs. Norton and Harrison Co. of Manila, whose first steamer, the s.s. Rio Pasig (American flag) loaded here in October for San Francisco and which undoubtedly will be followed by other boats at as frequent intervals as shipping requires and suitable boats can be secured. Mr. L. Everett, local agent for Messrs. Norton and Harrison Co., says that inquiry for space by future sailings indicates clearly that Shanghai shippers are ready to support the new line.

Messrs. Norton and Harrison Co. are a Manila firm of high standing, commercially. One of their lines is the importing of Oregon pine lumber from the Pacific Coast to Manila and it is presumed that the ships will be used for their own return cargoes of lumber.

Magnetic Survey of China Coast.—Dr. Charles K. Edmunds, President of Canton Christian College, a specialist in physics who is assisting the Carnegie Foundation in making a magnetic survey of Eastern Asia, reports that the preliminary survey as undertaken should be completed by next May. When this is done there will be very few points in China more than 150 miles distant from a station where magnetic conditions have been investigated. Dr. Edmunds states that at each point where investigations are made, there are three things to be determined; the angle of variation of the magnetic needle from due North, the dip of the needle from the horizontal, and the intensity of the magnetic force. The result of the survey will make possible a more accurate use of the compass on the sea by those engaged in navigation, and in addition the help afforded to mining, railroad and other engineers on land will be of considerable importance. Dr. Edmunds reports that the Chinese government has been sympathetic toward this scientific work, and particularly the officials of the Maritime Customs Service have not only been sympathetic, but have rendered substantial aid in many ways.

New Java-Frisco Service.—The Java-China-Japan steamship line has planned to open a monthly freight service between Java and San Francisco, through Manila and Hongkong. The main office in Amsterdam has telegraphed to the Chamber of Commerce in San Francisco requesting assistance in securing railway connections. They replied by telegram that details would be arranged after representatives of the company reached San Francisco. It is understood that efforts will be made to induce the line to include Shanghai in its list of ports.

T. K. K. from Dairen to Frisco.—It is now announced that the Toyo Kisen Kaisha will open a freight service between San Francisco and Dairen shortly and all preparations for starting this line are reported to have been completed. For a time only one steamship will be run on this new line, and the company has contracted to charter the Shinsei Maru, 6.200 tons, which will leave Yokohama in December. The Shinsei Maru was sold to Mr. Naruse of Kobe by the Kishimoto Steamship Company for 270,000 yen in March. She was again recently sold to her present owner by the Kishimoto Steamship Company for 570,000 yen.

Panama Reopening Indefinite.—It has been officially announced that owing to continued movements and sliding of material, it is impossible to predict any approximate date for the re-opening of the Panama Canal. The average loading of the 983 laden vessels which passed through the Panama Canal during the fiscal year was 5,055.7 tons, and the average for all vessels, laden in ballast, in that time was 4,567.8 tons, according to an analysis published by the Canal Record. The number of vessels which passed through the canal carrying 10,000 or more tons of cargo was 41. The largest cargo was 12,040 tons, consisting of sugar and general produce, carried by the s.s. Alaskan. Of the 41 vessels, 28 ships, or 68 per cent., were in the service of the American-Hawaiian Steamship Company, operating in the United States coastwise trade.

Japan-New Zealand Line.—For the time being negotiations between Kobe steamship owners and oversea commercial men for a direct line of steamers between Japan and New Zealand, have been going slowly owing to the difficulty of return cargoes from New Zealand to Japan. The present idea is to have three steamers of between 4,000 and 5,000 tons. The chief aim is to get the line started for the coming wool season in New Zealand and to catch the next summer's trade for Japanese goods in New Zealand. Negotiations are being made to charter for the service the s.s. Keizan Maru, 3,159 tons, Daiten Maru, 4,555 tons, and Ataka Maru, 3,758 tons, the two latter being registered at Dairen.

U. S. Shipping Increased.—More ships are now flying the American flag in the foreign trade than at any other time since 1863, and the United States is pressing close upon France and Norway as a maritime nation. For the year ended June 30, there were registered in the foreign trade 2,768 ships, totalling 1,813,775 gross tons, an increase of 363 ships and 737,623 tons for the year. This is about triple the increase in registered tonnage for any previous year in American history, and the registered tonnage is now much greater than at any time since 1863, when 2,026,114 gross tons in foreign trade flew the U. S. flag. The steam tonnage now amounts to 1,273,067 gross tons, while in 1863 it was but 133,215 tons. The increase from the Ship registry Act of August, 1914, to June 18, 1915, was so rapid that tonnage under the American flag now employed in foreign trade is nearly equal to such tonnage under the French or Norwegian flags.

Returns filed with United States Bureau of Navigation, Department of Commerce, show that at the beginning of the current fiscal year, July 1, 1915, the shipyards of the United States had under construction or under contract 65 steel merchant vessels of 296,426 gross tons, the largest amount of work at the corresponding date since July 1, 1907, when 134 steel merchant vessels of 403,473 gross tons were under construction or contract. The steel merchant tonnage now under construction on the seaboard, however, 60 vessels of 288,701 gross tons, is greater than in any previous year, the nearest approach being 63 vessels of 273,865 tons in July, 1901. Of the vessels now building, 21 are bulk oil carriers of 154,056 gross tons, six colliers of 25.475 gross tons, and five passenger steamers of 17,000 tons, the remainder being cargo boats.

FINANCE

China's Salt Tax Surplus.—The Quintuple Group, subject to certain conditions, has handed over to the Chinese Government £550,000, being the balance of money set aside for the reorganization of the Salt Gabelle, which Sir Richard Dane says he does not require for that purpose. The amount actually released was £750,000, but the Banks deducted certain loan charges amounting to £200,000.

Plan New Bank for Manchuria.—Wang Cheng-yao and other merchants have raised a large capital to establish an industrial bank called Fohsin Colonization Bank in the Three Eastern Provinces to develop their natural resources. The object of the Bank is to utilize its capital of $5,000,000 for agriculture, afforestation, irrigation, reclamation, colonization, mining and other industrial enterprises. The Head Office will be in Peking, and branches will be established in various localities on the frontier. The project has been registered in the Ministry of Finance, and the petitioners have been instructed to apply again for formal recognition and registration as soon as one fourth of the proceeds of the fixed capital has been collected from the shareholders.

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Shasi-Singyi Railway.—According to the report of engineers despatched by the Communications Department to survey the route for a railway starting from Shasi in Hupeh and extending to Singyi in Kweichow, after passing through Hunan, the entire line will measure 655 miles, with a branch from Changteh to Changsha extending 105 miles. The following is the distance in miles between important towns:

Shasi—Lichow, 50; Lichow—Changteh, 40; Changteh—Shenchow, 110, Shenchow—Fenghuangting, 45; Fenghuangting—Yuanchow, 35; Yuanchow—Huangchow, 30; Huangchow—Enchow, 30; Enchow—Chenyuan, 30; Chenyuan—Huangping, 30; Huangping—Pingyueh, 30; Pingyueh—Kweiyang, 60; Kweiyang—Anshun, 60; Anshun—Chenning 20; Chenning—Chenfeng, 35; and Chenfeng—Singyi 40.

Shantung Line Makes Money.—The monthly income of the Shantung railway line which was 50,000 to 60,000 yen at the time when it was placed under Japanese management, has now been increased to 200,000 yen, reports the Yorozu. When the monthly expense of 170,000 yen is subtracted there is a profit of 30,000 yen. The Japanese authorities at Tsingtau are endeavoring, it is said, to repair the tracks and rolling stock and will try to make the line pay better than it did under German management.

Kirin-Changchun Railway.—The following statement regarding the Changchun-Kirin Railway, control of which has been given by China to Japan, is from the Japanese press and outlines contemplated improvements:—

Years ago, the South Manchuria Railway Co. approached the authorities of the Kirin-Changchun Railway to establish through traffic. The Chinese were not inclined to entertain the proposition. It was thought the Kirin-Changchun Railway, extending only 80 miles, would be made a cat's paw to the trunk road. But when through traffic is established, many things must be improved, including the Kirin-Changchun coupling apparatus which is different in style and in a position that makes coupling with the rolling stock of the S. M. R. Co. impossible. Most of the passenger cars are too old for service.

At present, the line has 13 engines and 262 passenger and freight cars.

The staff of the company consists of 5 Japanese and some 180 Chinese, rather too many persons for a short railway, and salaries are higher than those paid by the Peking-Mukden railway.

The railway revenue shows a monthly surplus of about $17,000 and in the future when places along the line develop, the profit should greatly increase in proportion. The company's receipts for the first five months this year were in yen:

January, Y67,865; February, Y60.125; March, Y79,625; April, Y28,795; May, Y54,080.

In April the income was decreased owing to floods.

The railway is completed all but the tunnel at Tumen Mountain.

The road is substantially built and the top of the embankment is 18 feet wide at the narrowest point, whilst the width of a cutting is fifty feet. Bridges are much more strongly built than the requirement of the Peking-Mukden Railway, so that they can fully stand the weight of a train. Sixty pound rails are used, on which an engine weighing about 80 tons speeds at the rate of 28 miles per hour on an average. They must be changed to heavier rails if traffic increases, but will prove serviceable so long as they do not carry an engine heavier than 90 tons. Ballast is being constantly replenished, and the road-bed is steadied by degrees.

SHIPPING

Dutch Line's New Service.—The San Francisco Chamber of Commerce has just informed the Bureau of Foreign and Domestic Commerce that, as the result of nearly a year of endeaver on its part, the Java-China-Japan Lijn, of Amsterdam, is to establish a monthly service of first-class cargo steamers between Batavia, Java, and San Francisco, the new service to start with a sailing from Batavia on December 15. Steamers will load at Batavia, Cheribon, Samarang, Soerabaya, and Makassar, thence proceed to Manila, Hongkong, and San Francisco. The first vessel of the new service will reach San Francisco in February. The call at Manila is said to be the result of an invitation extended by the Manila Merchants' Association and seconded by Governor General Harrison.

Foochow Shipping Returns.—The total number of steamers entered and cleared at Foochow for the quarter ended June 30, 1915, was 389 ships of 264,748 tons, an increase of ten ships but a decrease of 39,603 tons over the same quarter last year. Of the total 39.3 per cent. were British against 33.6 per cent. the year before, 36.8 per cent. Chinese against 26.8 per cent., and 24.6 per cent. Japanese against 24.2 per cent. the year before.

New Chinese Line Starts.—That the first steamer of the new Chinese Pacific line has sailed from San Francisco, was the information conveyed in a cablegram to the bureau of posts early in November. The cable announced that the China had sailed from San Francisco on October 30 with 650 bags of U. S. mail for Manila.

On October 14 the Daily Bulletin received a cable from Washington announcing that the Chinese company had purchased the China from the Atlantic Transport Company, and that she would leave San Francisco on the Pacific Mail schedule of the Manchuria, October 16. This sailing was postponed to the schedule of the Nile, which was due to sail from San Francisco, October 30, via Honolulu and Japan, and to arrive at Manila November 25 sailing on the return trip to San Francisco via Hongkong, Japan ports, and Honolulu.

The Chinese papers report that some Cantonese merchants are preparing to subscribe stock in the new Chinese steamship company of which a prospectus has been published stating that capital of the new concern will be 5,000,000 yuan, in 100,000 share of 50 yuan each.

Pacific and Eastern Line.—According to a despatch from San Francisco, the Pacific and Eastern Steamship Company has been registered at Albany, N. Y. The company, under the American flag, will maintain a Pacific navigation service with the co-operation of Chinese. The capital of the concern is G. $2,000,000, one half of which Americans will take up and the other half will be subscribed by Chinese. Mr. John Mitchel has been nominated president, while among the Chinese directors are one adviser and two secretaries to the Chinese Legation. Mr. Hsia, former Chinese Minister to Washington, is one of the big shareholders. The Chinese Legation is said to have stated that the Chinese government was connected with the new concern. Since the Pacific Mail Company retired, much more criticism has been heard against the government in connection with the Seamen's Law, and the administration welcomes the formation of the new company. The Ship Purchase Act will be again introduced, and if the new company be placed under unfavorable conditions, after the said act is passed, the government will take measures to remedy this, it is said. Although the president of the company denies that it has any relation to the government, it is considered a fact that the United States government is unofficially connected with the formation of the company.

French Mail Adds Ship.—The Messageries Maritimes is putting a new steamer, the Athos, on the line from Europe to Japan and China via Saigon and Haiphong. The Athos was scheduled to leave Marseilles Nov. 10 on its maiden trip. It is of 19,640 tons displacement and 11,000 tons cargo capacity, has accommodation for 110 first-class, 96 second-class and 110 third-class passengers and an average speed of 14 knots.

Philippines Plan Tonnage Tax.—The tax committee of the Philippines has recommended the passage of a law which provides for the collection at all ports and places in the Philippine Islands of navigation and port charges. On vessels arriving from non-Philippine ports a charge of fifteen centavos (P.0.15) per net ton as expressed in the vessels' national certificates of registry. On the entry of a vessel from a port or place not in the Philippine Islands loading or discharging cargo which is less than the net tonnage of the vessel, dues of forty centavos (P.0.40) per thousand kilograms may be imposed, at the option of the master or consignor or consignee of the cargo, in lieu of the tonnage tax above prescribed. On the entry of a vessel only to discharge or take on board passengers and their baggage, the tonnage tax above prescribed shall not be imposed. Exemptions are vessels belonging to or employed in the service of the Government of the United States or foreign government vessels not engaged in trade; vessels in distress and yachts belonging to an organized yacht club of the United States or of a foreign nation which imposes no tonnage or equivalent taxes on American yachts. It is calculated by the board that P.200,000 will accrue to the Philippine government annually by the imposition of tonnage dues.

Siam's Queen to Have Yacht.—A motor yacht is being built at the Bangkok docks for the use of the Queen Mother. The vessel is 55 ft. in length and 11 ft. beam and will be propelled by two sets of four cylinder motors.

Japan's South Sea Service.—The new South Sea service will be opened shortly by the South Sea Trading Company under the

mean that the operations have been more efficiently conducted. The increase is largely due to the use of better and larger dredges. Yet the workmen naturally acquire more skill in operating, and probably also a more enthusiastic interest in the work. Thus though the production per dredge in 1913 was well in excess of that of 1912, the number of hours worked was appreciably less, being 3302 in 1913 against 3437 in 1912, which, of course, indicates a more efficient organization.

The quantity of gravel raised per dredge in 1913 was 247,687 cubic yards against 213,438 cu. yd. in 1912. The total production of gold and platinum by dredges in 1913 was larger in 1912 by 26,333 oz., an advance of 19.8%. This, in view of the fact that complaints are common respecting stagnation in the gold industry of the country, and the difficulty of stimulating to a larger production, shows that the Russian gold-producer, whether on his own initiative or under the pressure of Western European partners, is tending to employ large-scale methods of production that experience has proved worth-while, particularly as lack of success in the past has been ascribed to the petty methods employed.

Capacity of the dredges: four dredges produced up to 527 oz. of gold and platinum; two from 527 oz. to 790 oz.; three from 790 oz. to 1053 oz.; nine from 1053 oz. to 1317 oz.; six from 1580 oz. to 1843 oz.; seven from 1843 oz. to 2107 oz.; three from 2107 oz. to 2370 oz.; four from 2370 oz. to 2633 oz.; six from 2633 oz. to 2897 oz.; two from 2897 oz. to 3160 oz.; and two from 3160 oz. to 3423 oz. Eight dredges produced respectively quantities exceeding 3423 oz., rising to over 5260 oz., over 8952 oz. and over 1000 oz. for the three last in the series,

The first gold dredge to go to work in the Amur region is the one operated by the Amur Gold Mining Co. It is on the Kharga, a stream that empties into the river Selemdja, a tributary of the Zeya, which, in turn, feeds the great Amur River, the confluence being the town of Blagovestchensk, the residence of the Governor of the Amur territory and the point of export for the gold of Eastern Asiatic Russia.

This region is characterized by ancient sedimentary strata and old intrusive igneous masses, the predominant rocks being micaceous and hornblendic gneisses. Owing to the excessively wet climate of the country, oxidation has penetrated deeply, especially where the river Zeya with its tributaries has cut through these gneissoid masses and distributed the products of erosion as gravel in the river-beds. The greater part of these rich placers has been worked by natives with the crudest methods, but much of the gravel has not been touched as yet. The fragmentary reports of the Amur Gold Mining Co. show, however, what can be done in this region by dredging.

The dredge was purchased from the Werf Conrad Company at Haarlem, in Holland; the capacity of the bucket is 5 cubic feet. The steel pontoon, and all the requirements for the dredge, weighing altogether 505 tons, cost $55,000, including transportation to Blagovestchensk, Eastern Siberia. The machinery was then carried, in the summer of 1913, by steamers on the Zeya to the Norsk factory; then, in winter, from this factory, it was carried on sleighs, along the frozen surface of the Selemdja River, for about 245 miles, to the Zlatuostovsky placer, on the Kharga, at a further cost of $35,000. The various items of expenditure were:

Cost of plant delivered at Blagovestchensk	$55,000
Transport thence to the dredging ground	35,000
Putting the parts of the dredge together in place	10,500
Equipment of the machine-shop ...	6,000
Building of the new settlement ...	9,000
Total cost of the dredge and buildings	$115,500

The erection of the dredge was started on January 25 and was finished on the last day of May, 1914. Actual dredging started on June 15 and finished on October 15, 1914. During all this time work of dredging proceeded in the bed of the stream and partly along the rims of the same. The following figures show what was done.

Working days	104
Days lost on account of the high water, breakages, etc.	27
Total working hours	2,498
Cubic yardage treated	158,521
Daily average yardage	1,500
Average dredging time daily	...19 hr. 49 min.
Average value per cu. yd. ...	75c.
Ounces of gold recovered ...	7,554
Value of gold recovered... ...	$120,199
One ounce of gold in Russia is worth	$15.90

To the cost of the dredge should be added the sum of about $22,000 for maintenance during the winter, also fuel, and different repairs preparatory to starting on the second annual campaign, in the spring of 1915.

The grand total cost, therefore is ...	$137,000
The total gold recovery is	120,199
Showing a loss of	$16,801

The dredge is in operation this summer and naturally will work to better profit than in the preceding year, as there will be no more of the first high costs of purchase and equipment. The dredge is of the New Zealand type.

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Kiukiang RailroadConstruction.—According to a British Consular report on the Nan-Hsun Railway for some years past the reports of the work done have been of such a disappointing nature that there is some satisfaction in stating that passengers are now, at any rate, able to travel from Kiukiang to a point about 1 mile from the river bank on the opposite side to the city of Nanchang. Lacking a bridge at Tukiapu, passengers have to change trains and cross the river in boats. This bridge at Tukiapu, which, owing to the width of the river in flood time, will be a difficult and expensive undertaking, may not be finished until next year. The new station at Teianhsien, with a fine building and long and wide platform, has recently been opened. The track between Teianhsien and Tukiapu is now said to be in good condition, but the reverse would appear to be the case with the track between Nanchang and Tukiapu as the couplings of the carriages frequently become disconnected. On the opening of the line the return journey, a distance of about 30 miles, occupied seven hours.

The piers of the new bridge at Teianhsien are being gradually erected. The bridge at Lianglukin is said to be ready for the iron girders. Two passenger trains are running daily each way between Kiukiang and Teianhsien, and a train daily each way between Teianhsien and Tukiapu, in connection with the daily train from Nanchang to the river opposite Tukiapu. This train consists of a locomotive and two carriages which were brought from Kiukiang to Tukiapu in sections, conveyed across the river, and put together on the Nanchang side. The total length of the line is about 87 miles, and the gauge is the standard gauge of 4 feet 8½ inches.

The Japanese, by virtue of two loans which they have made to the railway company, have a strong financial interest in the line. The first loan was for $7,000,000 and the second loan, of which $2,000,000 has not yet been advanced, was for $5,000,000 with interest at 7 per cent. The bank concerned is the Kiukiang branch of the Bank of Taiwan, Limited. The construction of the line is being carried on under the supervision of Japanese engineers, and it is reported that a Japanese has been appointed manager of the line and will shortly take up his duties.

Nanking-Hunan Railway.—Surveying has commenced from the Kiangsi end in connection with this important line, which is to connect Nanking with Nanchang, and is to pass through Pingsiang, into Hunan. The line, the construction of which is in British hands, will traverse an extremely rich portion of China, and should, incidentally, assist in making the Shanghai-Nanking Railway a paying concern. It should also help greatly in developing the provinces of Anhwei and Kiangsi.

Lung-Chin-Yu Hai Railway.—Despite lack of funds due to the stoppage of the Belgian Loan on account of the outbreak of the European war, after one year's labour Director Sze Shao-tseng has completed the construction of the Eastern Section from Hsuchow to Pienlo and a portion of the Western Section consisting of more than 1,000 *li*. The Ministry of Communications in acknowledging the excellent work of the director and his subordinates, has recommended 26 of them to the President for promotion and rewards for their services. This Railway line traverses four provinces, and the loan was contracted from the Belgians for its construction in the ninth month of the first year of the Chinese Republic. After his appointment as Director of this line, Mr. Sze drew up plans to hasten the construction, and remarkable progress was made. During the rebellion, the officers of this line at their headquarters at Hsuchow, despite the great disturbances which occurred, continued their work as usual, and more than half of the construction work was finished when the war broke out.

Change Terminus of Line.—The gentry of Kiukiang have requested the Ministry of Communications that the Pukow-Shengyang Railway line be changed into the Pukow Kuachow line in order to develop commerce. The request has been granted by the Ministry. The funds necessary for the construction of the line have been estimated at Tls. 1,600,000 and more than Tls. 700,000 have been already raised by the gentry. Construction work will be begun in the spring.

U. S. Cars for Kwangtung-Yueh-Han Line.—Although the cars in use on the Kwangtung-Yueh-Han Railway are of many kinds, the passenger cars being mostly of American manufacture, as are also the box cars, although some of the latter are of

English construction, it seems likely that the short English cars will soon be rejected, and that only the 8-wheel American cars of all classes will be used. Some steelwork, such as tanks, turntables, warehouses, etc., has been imported from America, and much Oregon pine for false work, ties, etc., has been and is being purchased there, but these articles are usually placed by Japanese, German, or English firms, for the reason that the American manufacturers are not adequately represented at Canton. The locomotives in operation are products of the Baldwin and the American Locomotive companies. Last year five consolidated locomotives were purchased—three from the American Locomotive Company and two from the Baldwin. The construction of the line now finished is fair quality. Eighty-five pound rails of American, Belgian, and Hankow manufacture are used on the main line. The steel girders and trusses are nearly all from the American Bridge Company.

The railway is at present almost completed as far as Shinkuan, 140 miles from Canton. Work on the last twenty miles has been greatly delayed on account of heavy rock cuts, and tunnels. Beyond Shikuan station three miles of grading, piers for the bridge over the North River (Erst Fork) at Shiukuan, and part of a long tunnel about 12 miles beyond Shiukuan are completed. The country between Shiukuan and Lokcheong, 170 miles from Canton, is rough and expensive to build upon. Beyond Lokcheong the line runs through very rugged country, will prove expensive to construct, and will have no local traffic until Pingshek, on the Hunan border, is reached. The passenger traffic represents about 60 per cent, the remainder bring transportation of cattle, firewood, limestone, rice, tobacco, and poultry. Later anthracite coal will be carried. Salt is sent over the line from Hunan and the upper North River districts. The traffic is satisfactory, and a large increase is expected when the line reaches Shiukuan. When the line has been completed to Hankow, it should be the most profitable in China.

Japan's RailwayEstimates.—The estimates of the Imperial Government Railways for the next fiscal year have been put at Y131,581,500 in the revenue and Y114,035,200 in the expenditure. Out of the balance of Y17,546,300 for net profit, Y500,000 is to be laid aside as reserve fund and the remaining sum is to be appropriated for the construction and improvement of the railway lines, together with sundry receipts Y953,700 and Y30,000,000 to be transferred from the general accounts.

Altai-Siberian Line.—The construction of the Altai Railway is now completed and the line will shortly be opened to traffic. The new railway will connect Novonikolaievsk on the trans-Siberian with Semipalatinsk in the Steppes Provinces, passing through Barnaul, in the Tomsk Government of Siberia, which will be the headquarters. This railroad, 500 miles in length, will serve the richest agricultural and mineral regions of Siberia. The Altai region has deposits of gold, silver, lead, zinc, and copper, which were worked in the eighteenth and nineteenth centuries, but afterwards abandoned owing to lack of transportation facilities and other causes. It contains also the exceedingly rich Kuznetz coal basin, 6,000 square miles in extent.

Liaotung Light Rail Lines.—The Liaotung Light Rail Line Co., Ltd., has been awarded a franchise and an annual grant of Y7,000 for five years. The new company is capitalized at Y100,000 wholly paid up. The first line to be constructed is one 26 miles long between Pulantien and Pitsuwo. The second line will connect Pitsuwo and Piluho, about 15 miles, and the third line will run from Port Arthur to Shuangtouwan, about 8 miles. The shares have all been subscribed by the promoters. Surveying will start at once, and construction work will be begun on the return of spring. Before the construction of the second line, the Company's capital will be increased.

South Manchuria Ry. Needs.—Estimates of S. M. R. Co. for the next fiscal year, according Mr. K. Tsukuda, Director, are not exactly known, but the aggregate estimates of capital expenditures are expected to reach about Y10,000,000. The Directorate is prepared to pass only such fresh enterprises as are considered absolutely necessary. The Fushun Collieries alone want something between Y3,000,000 and Y4,000,000, which can be hardly called excessive when the reorganization of the subterranean installations and the improvement of mining operations are taken into reckoning. The commencement of the reconstruction work of the Dairen Railway Hospital on its new site will want Y300,000.

To Link Siam and Malay States.—The British Minister at Bangkok, writing in regard to the proposed linking-up of the Siamese Southern Railway with the Federated Malay States system states that Kampong Rantan Panjang has been fixed upon as the place at which the two systems will be connected, the new survey of the Siamese line to the Kelantan boundary having been completed, while the Federated Malay States Railways Administration has completed its line to the Golok River, the frontier between Siam and Kelantan.

New Indian Railways.—The Indian Railway Board has sanctioned the construction of a branch line of railway on the 2' 6" gauge from Futwah, a station on the East Indian Railway, to Islampur about 27 miles; the extension of the Mayurbhanj State Railway, 2' 6" gauge from Baripada to Talband, a distance of about 39 miles. A detailed survey is being carried out for a line of railway, 2' 6" gauge for an extension from Modassa to Meghraj, 13 miles.

Ceylon Starts Survey.—The Survey of the trace for the extension of the Ceylon Government Railway from Chilaw to Puttalam, which has been sanctioned by the Secretary of State, will be started immediately, funds for the purpose having been provided in the estimates for the new financial year. Mr. D. G. Heslon, Assistant Engineer, Railway Extension Department, who is at present in charge of the duplication of the main line from Ragama upwards, will be appointed to carry on the work and his place will be taken by Mr. W. J. Shelley, at present in Mannar.

Bahmo-Tengyueh Railway.—In a report on the Consular district of Tengyueh the British Acting Consul remarks upon the imperative need for increased commercial facilities between Burmah and Western Yunnan by the construction of a line of railway between Bhamo and Tengyueh. Eighteen years have elapsed since the agreement between the United Kingdom and China, modifying the Burmah Convention of 1897, was signed. By that agreement the following addition was made to Article XII, of the original Convention:—"The Chinese Government agrees hereafter to consider whether the conditions of trade justify the construction of railways in Yunnan, and, in the event of their construction, agrees to connect them with the Burmah lines." The Chinese Government have demonstrated long since by their official acts their readiness to carry out the first half of this undertaking, and it has also long since been recognized as an undoubted fact that in Western Yunnan—the portion of the province, that is, which more nearly concerns the United Kingdom, in that the territory of Burmah marches therewith for many hundreds of miles—the conditions of trade fully justify the construction of railways. More routes than one have been planned and carefully surveyed for a line connecting important trade centres in Western Yunnan with Burmah, and the general consensus of expert opinion favours the route followed by the existing main thoroughfare for traffic, namely, from Bhamo to Tengyueh. Whether the extension, also projected, of such a line over the 160 miles of very difficult mountain region separating Tengyueh from Talifu would prove remunerative for many years is open to doubt, but local Chinese traders are practically unanimous in supporting the various foreign experts who state that the construction of a railway over the 124 miles between Bhamo and Tengyueh would prove a thoroughly paying concern very soon after its completion.

At present, freight rates in force over the railway line in the southeast of the province, from Indo-China to Yunnanfu,—constructed by French engineers in face of great difficulties and opened to traffic on April 1, 1910—are still so high that Tengyueh merchants are able to lay down cotton yarn, despite heavy charges for mule hire over the 32 days' journey by road from Bhamo, in Yunnanfu at a price which competes with the same article by rail direct from the sea.

Shanghai Tramways.—The following is the traffic return of the Shanghai Tramways (Foreign Settlement) for November, 1915, and for eleven months ended November 30, 1915, with figures for the corresponding periods last year:—

	November, 1915.	November, 1914.
Gross receipts	$118,386.48	$108,202.86
Loss by currency depreciation	31,916.74	29,445.90
Effective receipts ...	$86,459.74	378,756.96
Percentage loss by currency depreciation	28.64	28.98
Car miles	276,490	264,870
Passengers	5,271,639	4,883,919
	11 months to November 30, 1915	11 months to November 30, 1914
Gross Receipts...	$1,220,452.81	$1,188,687.55
Loss by currency depreciation	328,772.24 Mex.	288,721.08 Mex.
Effective Receipts ...	$891,680.57	$899,966.47
Percentage of loss by currency depreciation	28.65	25.80
Car miles	3,039,115	3,018,225
Passengers	54,086,176	51,075,653

The tram company is one of the few concerns that drew a profit from the ricsha strike. The week ending December 1 saw 1,225,623 passengers carried, and much of the 265,288 increase was due to the ricsha trouble.

Ssupingkai Line.—Mr. M. Odagiri, Director of the Yokohama Specie Bank, gave the following account of the Ssupingkai-Chengchiatun Railway negotiations to a Dairen newspaper reporter, during his recent visit there:

The negotiations *re* the Ssupingkai-Chengchiatun Railway Loan Agreement were opened early last July and were brought to a successful conclusion in the latter part of November. Altogether twenty-three formal meetings took place in the intervening period in addition to many more unofficial interviews. The progress of the negotiations was submitted to H.E. President Yuan on the night of the 15th inst. The Presidential sanction was given on the morning of the following day. On the ensuing day, the 17th inst., the representatives of both parties signed the Loan Agreement. The Loan Agreement consists of 26 articles, appended with a supplementary agreement composed of 8 articles. There are besides 18 written notes exchanged mutually. None of their texts are yet ready for publicity. All that I may say is that the amount of the Loan is G. Y5,000,000 (not S. Y 5,000,000) with 5 per cent. interest and secured with the railway itself and receipts. The Loan is to be floated in Japan. In case of the financial condition of Japan being found not quite so responsive as hoped for, Taels 3,400,000, the amount set aside

THE JAVA CANE SUGAR INDUSTRY

The report of the Netherlands East Indian San Francisco Committee of the Department of Agriculture, Industry and Commerce on the Java Cane Sugar Industry shows a rapidity of growth almost startling. In 1888 Java's total production was estimated at 300,000 long tons. Ten years later it had reached 700,000 tons and twenty years later it reached 1,200,000 tons and in 1911 it had reached over 1,400,000 tons, falling back slightly for 1912.

These rapidly rising figures of production in a complex industry like sugar are startling evidences of the value of the methodical study that the Dutch people of Holland have thrown into their work in their island possessions, as well as in their own homes in the lands they have rescued from the sea. Even the English colony of British Guiana, where the Demerara sugars have developed a demand for their notable crystals, was started in its sugar production by the Dutch, who at one time controlled English Guiana and still control the adjacent colony of Surinam.

The report above refers to the Java sugar industry, but the committee have issued quite a large number of bulletins concerning various phases of Dutch industrial life, more particularly in the Far East. In 1912 there were 184 factories working in Java with 347,000 acres of cane under cultivation, producing 1,384,000 long tons of sugar. The area occupied in the cultivation of cane in general is much greater than the proportions of the figures here given, for the cane requires twelve months for its growth and planting goes on simultaneously with the harvest season. In fact, it is estimated that a million of the 1,200,000 acres of the lands were in control of the sugar industry in 1912 to cover the 347,000 acres that were being cultivated for present delivery. Various other crops are planted in Java, the cane crop being planted every year, or at least but one crop is gathered and then the land is put in some other crop and cane may be put in again in the second or third year.

The Dutch government began the industry more than eighty years ago by compulsory order, protecting the natives in all their rights and giving them the alternate use of the lands, but requiring them to be planted in sugar cane in regular rotation and the natives to be compensated for their labor. As the island has quite a large population the whole plan seems to have worked out extremely well, as indicated by the rapidly increasing figures that we have already given. The actual compulsory system did not last very long, but sufficiently long to start the industry along the lines of success that we have indicated.

The sugar industry in Java is almost exclusively carried on in irrigated fields, the irrigation works being the same as those in use for the cultivation of rice, while the right of employing these works is included in the rent of the land. A cane crop takes about 15 to 17 months in time during which the European manufacturer may occupy a field, but cannot exceed the above period, the native farmer using the land before and after that time. More than a century ago large tracts of land were sold here and there in Java and such owners are now quite free to plant and irrigate as they may choose.

In regard to the matter of labor, the cultivation in Java is carried on most intensively during the greater part of the year and demands an important labor force. The sugar estates being as a rule in densely populated districts in the low land, it is generally not difficult to get the necessary laborers, but in newly cultivated districts, or on perpetual lease holdings in thinly populated districts, it is almost impossible at times to get an adequate labor supply. During the rice harvest and at other times when public works are being constructed, there is considerable difficulty, but on the whole Java, as contrasted with other cane growing countries, occupies a favored position.

Heavy work is done exclusively by men. The lighter work such as cutting tops, planting, watering, weeding and supplying, by women, while children are only used for destroying insects and similar light work. The seed of the crop consists of the tops of the sugar cane, which measure a few joints and as a rule carry three buds or eyes. They are cut from the ripe cane at the time of its being crushed and also from cane intentionally planted for this purpose and which is still in an unripe state.

The seedlings used for planting are cut in pieces having three eyes. The trash is stripped off, those infected with insects or fungi or those which are shriveled and sickly, are collected and condemned, while the sound ones are disinfected by means of a Bordeaux mixture with 96 per cent. water, which kills any adhering traces of parasitic fungi. The cuttings are laid down in rows lengthwise and horizontally, one after the other and with their eyes on the sides and then covered with earth, after which they are irrigated, which is repeated every three to five days. Afterwards the intervals are longer and this continues until the cane has grown up well. As the stalks of the cane develop they are banked up. The secondary stalks sprout, the formation of roots is hastened and the plants now stand firmly in the ground.

With the second and third banking or working, the fields are manured, on which process a great deal of money is spent in Java. A few years ago the manures were exclusively nitrogenous material, while potash and phosphoric acid were considered of no use. Now it has been found on closer inspection that many fields are poor in phosphoric acid and this kind of manure is beneficial to such fields. Potash is said to be present in the Java soil in a sufficient quantity. As soon as the leaves shade the ground the weeds die out. The fields of cane grow to about 13 feet in height.

Under the compulsory system, between 1830 and 1879, Java sugar was shipped exclusively to Holland. Afterwards a large quantity of sugar was exported to England, where a dry, gray sugar 15 to 20 Dutch Standard, was desired. Of the lower grades some went to England, but they found their way chiefly to China and other eastern markets. After 1890 the American market displayed an increasing interest in Java sugars and from 1896 to 1900, especially during the Spanish war, America bought the greater part of the Java crop. For many years a small quantity of white sugar has been made in Java for home consumption, but the manufacture of this article for exportation dates from the year 1903, when a shipment of a thousand tons was forwarded to Karachee. This was a success, and ever since the sugar factories in Java have been manufacturing white sugar for the British India market. After a short time they succeeded in supplying a faultless white article, without greater factory loss than was suffered in the manufacture of Muscovado. In 1911, owing to the drought in Germany, white sugar was also shipped to England.

LIKIN ON THE TIENTSIN-PUKOW RAILWAY

"K.D.S." writing in the *British Chamber of Commerce Journal*, says: "In September, 1913, all likin stations on the Tientsin-Pukow Railway were abolished, and the Railway Administration in order to compensate the provincial authorities agreed to hand over 6 per cent. of the goods traffic receipts. This arrangement remained in force till June 1st, 1915. On that date twenty-seven likin stations were set up once more and foreign goods traffic in the "up" direction has practically ceased. It could not stand the burden of likin.

"As a result the Tsingtau-Tsinanfu Railway, on which no likin is charged, has secured the greater part of the cargo sent from Shanghai to Tsinanfu; it has been found most difficult indeed to cope with the demand for freight on this line. This now forms the cheapest route for piece-goods from Shanghai, the rate of freight from Shanghai to Tsinanfu being about $10 per ton.

"The Tsingtau-Tsinanfu Railway is deliberately competing against the Tientsin-Pukow Railway. This may be seen from the fact that, while freight for intermediate stations remains the same (Tsingtau to Chowtsun for instance being 70 Mexican cents per 100 kilos), the freight from Tsingtau to Tsinanfu has been reduced to about half the old rate and is only 40 cents per 100 kilos. It is in fact cheaper for goods consigned to Chowtsun to travel first to Tsinanfu by rail, and then back to Chowtsun by bullock cart.....

"The freight on the Shanghai-Nanking and Tientsin-Pukow Railways is about $9.00 a ton. It will thus be seen that the freight by this route is about $1.00 a ton cheaper than by the Shanghai-Tsingtau-Tsinanfu route, even at a moment when freights on the Tsingtau-Tsinanfu section have been reduced to a minimum.

"The freight on the Shanghai-Nanking Railway and Tientsin-Pukow Railway route could easily be reduced still further for a regular business, especially in such items as coolie and boat hire at Nanking. It is doubtful if the Tsingtau-Tsinanfu freight would stand much further reduction.

"We now come to the real difficulty in the situation. The likin on the Shanghai-Nanking-Tsinanfu line amounts to about $20.00 a ton, or say twice as much as the entire transport charges. In consequence no piece-goods business goes by this route to Tsinanfu, and the Chinese officials have killed the goose that lays the golden eggs.

"A point for the Chinese Government to note is that before the war the headquarters of the piece-goods firms were in Tsingtau. They have now been transferred to Tsinanfu. If the Chinese Government wish the firms to remain in purely Chinese territory at Tsinanfu and not to be re-transferred to Tsingtau, they must give the firms an alternative route for the transport of their goods. If they persist in the present policy of extortionate likin charges, the firms will inevitably go back to Tsingtau immediately the political horizon becomes more settled.

"From the difference in favour of the Shanghai-Nanking Railway and Tientsin-Pukow Railway route, as compared with the Tsingtau route, it is evident that the Chinese Government could still receive a reasonable sum in taxation by charging an equitable percentage on freight on the lines of the policy in force between September, 1913, and June, 1914. At present they receive practically nothing."

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

300 Cars for Peking Mukden Line.—The freight traffic of the Peking-Mukden Line has steadily increased, and the demand for rolling has been so great, due largely to the heavy traffic in coal between Tangshan and Tongho, that recommendations have been made for the addition of two hundred 30-ton coal cars, one hundred 30-ton covered-goods cars, and 12 locomotives. The first "all steel" 30-ton cars were used during 1914, and are now the standard of that type of car on this line. The tonnage capacity of freight cars of all classes was 62,554 in June, 1914, as compared with 59,711 in June, 1913; and there was an addition of eight locomotives during the year. The ratio of working expenses to earnings was 36 per cent for the year ended June 30, 1914, as compared with 27 per cent for the previous year; and the earnings for 1913-14 were $460,184 gold less than for 1912-13.

Taokou-Chinghua Earnings.—There was an increase of about 12 per cent in the amount of freight carried by the Taokou-Chinghua Line in 1914 over the previous year. The total receipts in 1914 were $247,381 gold, as compared with $228,388 gold for 1913. Coal forms by far the largest part of the freight carried by this road. Other commodities transported are timber, salt, kerosene oil, bamboo, ginger, tobacco, machinery, medicine, and grain.

Electric Tramway for Harbin.—It is reported that the directors of the Chinese Eastern Railway have awarded a concession to the Russian firm of Barski & Co., at Harbin, to construct an electric tramway between the Pristan and Old Harbin, via New Harbin, and with a branch line to Fuchiatien, the Chinese city. The total length of the line will be about 7 miles. A local newspaper stated that the construction of the tramway was to begin immediately.

S. M. Ry. and Russian Coaches.—With regard to the order for railway carriages by the Russian Government, which has been a subject of communication between Japan and Russia for sometime, the South Manchuria Railway Company has now accepted a contract for the supply of 1,509 carriages. It is proposed to enlarge the Company's factory at Dairen so that it may be enabled to turn out 300 carriages a month. The total cost of the order is estimated at Y.30,000,000. Most of the materials will have to be imported.

Szepingchieh Line Agreement. — The loan agreement between the Yokohama Specie Bank and the Chinese Government of $3,400,000, for the construction of the railway between Szepingchieh to Chiengchiatung, the length of which is 52 miles, is said to be based upon the Tientsin-Pukow line agreement according to Peking Press reports. The negotiations for the construction of the five railways in Manchuria and Mongolia, the privileges for which were given to the Japanese some time ago, have been carried on for some time and it is believed that a satisfactory arrangement is being arrived at between the two Governments.

According to Japanese reports, it was understood at the time of signing the Ssupingkai-Chengchiatun Railway agreement that the construction work shall be begun in June and completed in three years. Owing to the lateness of spring in the region along the proposed railway, it is usually well into July before the thawing process is completed. For this reason, the actual commencement of construction work is expected to be somewhat deferred. The process of the work should be rapid as the major portion of the proposed line traverses a level country.

The distance is about 52 miles. This route has been surveyed twice but a construction survey will have to be made taking about a month. The construction expense is expected to be less than Y60,000 per mile, on which basis the total outlay is about Y3,200,000. The heaviest outlay will be for the four bridges. The one over the Liao River will be about 2,000 feet long, and will cost between Y400,000 and Y500,000, which estimates are likely to be exceeded owing to the recent sharp rise in price of iron and steel.

Taonan-Urga Line.—The Living Buddha of Outer Mongolia is now a strong advocate for the construction of the long proposed line connecting Taonan in Fengtien and Urga in Outer Mongolia which has been delayed by lack of funds. The Living Buddha has suggested that if the Chinese Government determines to build the line, the Urga Government will be quite willing to supply half of the funds. The total cost of the line is said to have been estimated at $60,000,000.

Railway Construction in Chekiang.—The Railway makes but slow progress towards Shaohsing, says a correspondent of the N.-C. Daily News. Only a hundred men are at work on the line between Tsaongo and Shaohsing city and these have been concentrating on a cutting at Bahtayang, a place lying some twelve miles distant from here. No work has been done on the section between Shaohsing and the Chientang river; even the necessary land has not yet been acquired. The local papers reported that the line was going ahead this year with a Chinese engineer over the section Shaohsing—Tsaongo, an English engineer to be over the Shaohsing—Hangchow section. According to reports the city station site has been chosen outside the West Gate despite its inconvenience.

Shantung Railway.—In the course of a little over a year since the Shantung Railway passed into Japanese management, the traffic earnings of the Line, if coal freights are considered, have been raised somewhat above the figures under the German regime. For the last twelve months of the German regime the Line is said to have yielded Y13,000 per day, which represents the actual receipts of the Railway at present. There is no denying the increase of both imports and exports in Shantung and the annual receipts of the Railway may be put at about Y3,500,000. If the coal receipts are added, the total will reach about Y5,000,000.

The estimates of the Railway for the next fiscal year, both capital expenditure and working expenses combined, amount to about Y2,600,000, part of which sum will be employed for the improvement of the Line, construction of new locomotives, etc. Furthermore, the operation of Chinlingchen Iron Mine has been decided upon, and for this purpose about Y300,000 is separately asked for. This mine possesses 200,000,000 tons of ore. Working this when domestic demands for iron reach 1,000,000 tons, as against only about 300,000 tons put out, will make a great difference to Japan.

Chefoo-Weihsien Railway—The-Peking Daily News states that the Government has granted the request submitted by the Chamber of Commerce in Chefoo for the joint construction of the line connecting Chefoo and Weihsien by the Government and merchants. This line will be semi-official in nature, and its estimated cost is $10,000,000. It has been decided that $6,000,000 of the sum will be borne by Chefoo and another $1,000,000 by the six hsiens along the proposed line, $2,000,000 by the province of Shantung, and the remainder will be financed by other provinces and the Central Government.

Road for Kueichow.—Kueiyang citizens were much elated over the news that sanction had been given for a provincial loan for Kueichow of $1,000,000 to be used in the construction of a big road for vehicular traffic from Kueiyang by way of Anshunfu to Paichengho, and for clearing the river from that place down through Kuangsi, so that it will be navigable for motor-boats. In the absence of railway communication in Kueichow the plan seems to be an excellent one.

New Chinese Lines.—It is reported that the Ministry of Communications has decided to construct several lines of railways during 1916. They will include lines from Kalgan to Shuiyuan 317 li; one from Lanchow in Kansu to Ili and from Sian in Shensi to Lanchow in Kansu, 500 li. With the exception of the line from Lanchow to Ili, these lines have been surveyed.

Double Track for Japan Line.—The Imperial Railway Bureau has completed the purchase of land along the railway track between Ofuna and Yokohama for the construction of a double track line. The work has been begun and is expected to be finished by the end of this year. After the completion of the work, the railway service between Tokyo and the naval port will be greatly improved.

Favor Broad Gauge for Japan.—The special committee in the Railway Board has completed an investigation into the question of whether on the railways the present narrow gauge shall be continued in use or broad guage tracks shall be adopted. The investigations were started, it is reported, during the presidency of the late Dr. Sengoku, and have just been completed. It is reported that members of the committee have discovered the continuation of the present narrow guage system is not advantageous, and that the other system should be adopted. Since such a change requires a great deal of money, it is a question whether the government will agree to any immediate change.

P. I. Government to Buy Manila Railroad.—The negotiations between the Insular Government and the Manila Railroad Company for the purchase of the latter have resulted in the departure of Mr. Fisher Nesmith, the

gradual rise, with fluctuations to $86.00 on the 19th of March, during which month the average price was about $81.58; in May it dropped to $79.75; in June it was $81.71; and since then the market has shown a downward tendency. The average price for the whole period was $79.23 per pikul as against $80.86 for the first half of last year. The drop in price as compared with 1913, the last normal year, has been accompanied by an increase in the cost of placing tin on the London market and the working of a few properties has been effected; but the circumstances of the industry as a whole, under war conditions, may be said to be satisfactory.

The output for the first half of the year, reduced to a metallic basis, was 391,738 piculs, being 26,607 piculs less than for the similar term in 1914, but approximately the same as that for the first half of 1912. The decrease in the value of tin exported amounted to $3,278,208.

Tungsten Exports of Malaysia.—War requirements have led to an abnormal increase in the demand for tungsten ores for use in the manufacture of high speed steel and various forms of hardened steel, and the price in the United Kingdom has risen to fifty-five shillings per unit of tungstic acid, at which price it is being requisitioned by His Majesty's Government. The export of tungsten to places other than the United Kingdom and the Straits Settlements is prohibited. With a view to encouraging an increase in the Federated Malay States' production, the export duty on wolfram has been temporarily suspended and other attempts are being made to ascertain if other measures can be taken to effect any considerable increase in production.

The railway connection to the Malayan Collieries, Limited, is practically completed, the opening up and equipment of the mine is in an advanced stage, and before the end of the year a steady output of coal may be expected. Further trials of the coal from this Colliery have demonstrated its suitability for a variety of uses, and it is understood that experiments in briquetting are being undertaken.

The Raub Mine continues to be a steady producer of gold, and maintained its normal output.

Metal Markets of 1915-1916.—The following annual report on the metal market of the United Kingdom for 1915 and the outlook for 1916 has been furnished by Messrs. William Jacks and Co. of London and Birmingham.

The fluctuations in prices during the past twelve months will in themselves make the year 1915 a memorable one in the Metal Trade. Looking back we can see the effects of the formation of a standing Army of some four million men, a Navy with one million, and the remaining available labour of the country mainly engaged in producing Munitions of War, combined with the great and growing scarcity of shipping, brought about by the duplicating at various points on the map of our initial Expeditionary Force, and the consequent enormous rise in freights. In ordinary times trade demands contract as prices rise, and practically vanish as the advance is carried beyond a certain level, but all past experience counts for nothing under present conditions. The War profits which have accrued to our American friends have led to a sharp revival in the Home demand there which has gone far to accelerate the upward tendency that has prevailed throughout the entire year.

Iron.—Cleveland prices sagged early in the year on the general slackness prevailing in the Foundry Trade and stocks increased, but the rising freights made importations of American Iron impossible, and with the rise of 50s. per ton in Hematite and similar advances in Coal and Coke it was impossible for Cleveland Iron not to follow.

Copper has had wide fluctuations, due no doubt partly to American manipulation of the Warrant market, to assist them in marketing their increasing output of Electrolytic at two to three times its cost of production. With the Russian demand absorbing the bulk of the Japanese output as well as a considerable portion of the Australian output, their task has been an easy and profitable one.

Tin has only been affected indirectly by the War, and the fluctuations have been chiefly caused by the giving and withholding of Export Licenses by the Government. The fact that no Homeward Bound Tin has been sent to the bottom during the year must be a source of great satisfaction to Consumers and Underwriters—if not to Speculators.

Lead has moved both ways like Copper, depending largely upon the Russian demand earlier in the year, and later on the rapid rise in Atlantic freights, which, of course, is reflected in Lead to a much greater degree than in Copper or Spelter.

Spelter rose £87 in the first six months of the year, principally on the fact that all Sheets used in the Camps throughout the country were supplied galvanised. By the time a suitable substitute for Spelter was discovered by the Government in Bituminous Paint the price of Spelter fell £60, but later on firmed again on the increasing demand for Munitions.

1916. For the New Year it is impossible to predict, as everything depends upon the duration of the War. As we write, freights have advanced further, and as the new recruits are called up costs of all raw material produced in this country are bound to increase.

Iron is more affected than other Metals by this question of labour, but with a falling off in general demand and increasing difficulties in the way of rail and shipping facilities, consumption seems to us to have reached its maximum.

Copper.—The Transatlantic freight contracts at 17s. 6d. per ton are a thing of the past, and freights are now three to four times that figure. The block at New York and the scarcity of shipping facilities are likely to prevent any serious set-back in prices of Electrolytic Copper, and stocks of Standard Copper are small and easily manipulated.

Tin.—There seems no reason to look for important fluctuations in this metal, as supply and demand seem evenly balanced, and the Government have taken steps to insist that stocks in this country are kept at a reasonable level. This metal is also less affected by Peace prospects than any of the others.

Lead.—It seems to be doubtful whether the position in Mexico has really improved or not, but any prospect of more settled conditions there would appear to us to make Lead at £30 seem on a high basis.

Spelter.—It is to be hoped that producers in this country will be able gradually to increase their production in conjunction with our Australian friends and so make us independent of outside supplies, but this will take time, and under present conditions it does not seem probable that America will allow the position to ease.

Government to Supervise Mining.—Hitherto the antimony mines of Kuangsi have operated by private individuals under special permission of the Government. It is now decided, says the "Peking Gazette," that the mines are to be operated under the supervision of the Government and a sum of $200,000 has been set aside in connexion with this purpose.

New Coal Fields in Manchuria.—New coal fields are reported to have been discovered near Station Manchuli by the local chief of police. The fields are located about 5 miles from the Station Manchuli and 2 miles from the railway line. The discoverer has offered to sell his right in the deposits to the Chinese Eastern Railway which is investigating the amount and quality of the coal.

Japan's Lead Imports.—The demand for lead in Japan is about 20,000 tons a year, and the supply from home mines is only about 3,000 tons, or 15 per cent. of the amount demanded. Since the outbreak of war, the only source from which Japan has been able to obtain a supply was Australia, but it is reported that a strike in the mines there is expected to curtail the output by half. The demand for lead this year is greater because of the manufacturing of munitions of war for Russia. The supply of ores contracted for or in the course of arrangement for the year are as follows:

	tons	from
For Kamioka mine	5,000	Australia
,, ...	1,500	China
,, ...	3,000	Asiatic Russia
For Osaka Zinc Refinery	7,000	Australia
Refinery in negotiation..	10,000	,,
Available for other refineries	5,000	,,
Total.....	29,500	

The ore, when refined, is reduced by about half and the above ores will produce nearly 15,000 tons of lead. The home output of 3,000 tons, added to this, would make 18,000 tons in all, available for consumption for the present year. The average demand being 20,000 tons a year, and 4,000 tons being in demand for munition manufacturing, the total demand this year will amount to 24,000 tons. Supposing it is possible to curtail the consumption for regular purposes still there will be a shortage of supply of lead of about 5,000 or 6,000 tons. This has caused the market to harden, the present quotation being 25 yen for immediate delivery, and 23 yen for time bargains.

Japanese Steel Works to Expand.—At a recent general meeting of the shareholders of the Sumitomo Steel Works of Osaka it was unanimously decided to change the company into a joint stock company, with capital of 6,000,000 yen. The Sumitomo Steel works now has representatives traveling in the United States and England to buy up-to-date machinery to be installed in its works. As soon as the new equipment is installed, production on a larger scale will be started and an additional increase of capital, which the company proposes to open to the general public, will be announced. Baron Sumitomo is president of the company.

Chinese Work Russian Mines.—In view of the special conditions created by the war, the Goldmining Committee of the Ministry of Trade and Industry has declared in favour of provisionally suspending the regulation forbidding the employment of Chinese labour in the mines of East Siberia and the adoption of measures to facilitate the transport of Chinese workmen to the gold diggings.

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Indian Output of Coal.—India is now producing more coal than all British Dependencies, but Japan has got well ahead of her with an output of 21 million tons and is actively competing in the markets of Ceylon, the Straits Settlements, Sumatra and Java. India must naturally remain a practically non exporting country until the countries around become better developed industrially; under present conditions she consumes within her own borders 93.9 per cent of her production.

gradual rise, with fluctuations to $86.00 on the 19th of March, during which month the average price was about $81.58; in May it dropped to $79.75; in June it was $81.71; and since then the market has shown a downward tendency. The average price for the whole period was $79.23 per pikul as against $80.86 for the first half of last year. The drop in price as compared with 1913, the last normal year, has been accompanied by an increase in the cost of placing tin on the London market and the working of a few properties has been effected; but the circumstances of the industry as a whole, under war conditions, may be said to be satisfactory.

The output for the first half of the year, reduced to a metallic basis, was 391,738 piculs, being 26,607 piculs less than for the similar term in 1914, but approximately the same as that for the first half of 1912. The decrease in the value of tin exported amounted to $3,278,208.

Tungsten Exports of Malaysia.—War requirements have led to an abnormal increase in the demand for tungsten ores for use in the manufacture of high speed steel and various forms of hardened steel, and the price in the United Kingdom has risen to fifty-five shillings per unit of tungstic acid, at which price it is being requisitioned by His Majesty's Government. The export of tungsten to places other than the United Kingdom and the Straits Settlements is prohibited. With a view to encouraging an increase in the Federated Malay States' production, the export duty on wolfram has been temporarily suspended and other attempts are being made to ascertain if other measures can be taken to effect any considerable increase in production.

The railway connection to the Malayan Collieries, Limited, is practically completed, the opening up and equipment of the mine is in an advanced stage, and before the end of the year a steady output of coal may be expected. Further trials of the coal from this Colliery have demonstrated its suitability for a variety of uses, and it is understood that experiments in briquetting are being undertaken.

The Raub Mine continues to be a steady producer of gold, and maintained its normal output.

Metal Markets of 1915-1916.—The following annual report on the metal market of the United Kingdom for 1915 and the outlook for 1916 has been furnished by Messrs. William Jacks and Co. of London and Birmingham.

The fluctuations in prices during the past twelve months will in themselves make the year 1915 a memorable one in the Metal Trade. Looking back we can see the effects of the formation of a standing Army of some four million men, a Navy with one million, and the remaining available labour of the country mainly engaged in producing Munitions of War, combined with the great and growing scarcity of shipping, brought about by the duplicating at various points on the map of our initial Expeditionary Force, and the consequent enormous rise in freights. In ordinary times trade demands contract as prices rise, and practically vanish as the advance is carried beyond a certain level, but all past experience counts for nothing under present conditions. The War profits which have accrued to our American friends have led to a sharp revival in the Home demand there which has gone far to accelerate the upward tendency that has prevailed throughout the entire year.

Iron.—Cleveland prices sagged early in the year on the general slackness prevailing in the Foundry Trade and stocks increased, but the rising freights made importations of American Iron impossible, and with the rise of 50s. per ton in Hematite and similar advances in Coal and Coke it was impossible for Cleveland Iron not to follow.

Copper has had wide fluctuations, due no doubt partly to American manipulation of the Warrant market, to assist them in marketing their increasing output of Electrolytic at two to three times its cost of production. With the Russian demand absorbing the bulk of the Japanese output as well as a considerable portion of the Australian output, their task has been an easy and profitable one.

Tin has only been affected indirectly by the War, and the fluctuations have been chiefly caused by the giving and withholding of Export Licenses by the Government. The fact that no Homeward Bound Tin has been sent to the bottom during the year must be a source of great satisfaction to Consumers and Underwriters—if not to Speculators.

Lead has moved both ways like Copper, depending largely upon the Russian demand earlier in the year, and later on the rapid rise in Atlantic freights, which, of course, is reflected in Lead to a much greater degree than in Copper or Spelter.

Spelter rose £87 in the first six months of the year, principally on the fact that all Sheets used in the Camps throughout the country were supplied galvanised. By the time a suitable substitute for Spelter was discovered by the Government in Bituminous Paint the price of Spelter fell £60, but later on firmed again on the increasing demand for Munitions.

1916. For the New Year it is impossible to predict, as everything depends upon the duration of the War. As we write, freights have advanced further, and as the new recruits are called up costs of all raw material produced in this country are bound to increase.

Iron is more affected than other Metals by this question of labour, but with a falling off in general demand and increasing difficulties in the way of rail and shipping facilities, consumption seems to us to have reached its maximum.

Copper.—The Transatlantic freight contracts at 17s. 6d. per ton are a thing of the past, and freights are now three to four times that figure. The block at New York and the scarcity of shipping facilities are likely to prevent any serious set-back in prices of Electrolytic Copper, and stocks of Standard Copper are small and easily manipulated.

Tin.—There seems no reason to look for important fluctuations in this metal, as supply and demand seem evenly balanced, and the Government have taken steps to insist that stocks in this country are kept at a reasonable level. This metal is also less affected by Peace prospects than any of the others.

Lead.—It seems to be doubtful whether the position in Mexico has really improved or not, but any prospect of more settled conditions there would appear to us to make Lead at £30 seem on a high basis.

Spelter.—It is to be hoped that producers in this country will be able gradually to increase their production in conjunction with our Australian friends and so make us independent of outside supplies, but this will take time, and under present conditions it does not seem probable that America will allow the position to ease.

Government to Supervise Mining.—Hitherto the antimony mines of Kuangsi have operated by private individuals under special permission of the Government. It is now decided, says the "Peking Gazette," that the mines are to be operated under the supervision of the Government and a sum of $200,000 has been set aside in connexion with this purpose.

New Coal Fields in Manchuria.—New coal fields are reported to have been discovered near Station Manchuli by the local chief of police. The fields are located about 5 miles from the Station Manchuli and 2 miles from the railway line. The discoverer has offered to sell his right in the deposits to the Chinese Eastern Railway which is investigating the amount and quality of the coal.

Japan's Lead Imports.—The demand for lead in Japan is about 20,000 tons a year, and the supply from home mines is only about 3,000 tons, or 15 per cent. of the amount demanded. Since the outbreak of war, the only source from which Japan has been able to obtain a supply was Australia, but it is reported that a strike in the mines there is expected to curtail the output by half. The demand for lead this year is greater because of the manufacturing of munitions of war for Russia. The supply of ores contracted for or in the course of arrangement for the year are as follows:

	tons	from
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,, ...	3,000	Asiatic Russia
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ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

New Railway in Inner Mongolia.—Amplifying the brief statement regarding the Ssupingkai — Chengchiatun Railway line that appeared in the Engineering and Financial columns of the *Far Eastern Review's* January issue, the following more detailed account giving the bearing of the road from a political standpoint, may be of interest. It is abstracted from a report by the Harbin correspondent of the *North China Daily News*.

The news that the new loan for the building of a new railway on similar terms as the Tsinpu Railway between Shihpingkai and Liaoyangchow, better known as Chengchiatun, has been successfully concluded with the Yokohama Specie Bank is only what was to be expected, for an understanding between the Chinese and Japanese Governments has existed for some time past. The importance of this line cannot be over-estimated, and though according to Japanese engineers' surveys the line will be only fifty-two miles, it will eventually be the first section of the main line to Taonanfu, which lies some 160 miles to the north of Liaoyangchow.

Taonanfu may now be designated as the northern boundary town in the Japanese sphere of influence, and though actually in Eastern Inner Mongolia and lying one and a half degrees due north of Changchun, which belongs to Kirin province, it is administered over by Fengtien Province, whose capital is Mukden. Once the construction of this main line to Taonanfu is decided upon, schemes will be on foot to continue this line on to Tsitsihar, the capital of the Heilungchiang province, but before anything definite can be decided, it will be necessary for the Chinese Government to come to an arrangement with the Russian Government, for all the territory north of Taonanfu lies in the Russian sphere of influence.

The actual situation from a Russian point of view created by the building of this quasi-Japanese line to Taonanfu is an interesting one, for it undoubtedly will affect traffic earnings in the Chinese Eastern railway, who will find it necessary to have at least branch lines to tap the natural wealth of Eastern Inner Mongolia and to link up with their main line in order not to allow the Japanese line to secure a monopoly of this trade and divert it southwards. I will at a later date deal with this important question of the future in detail. It is now necessary to give some details of the first section to Liaoyangchow on which work no doubt will begin this spring.

Lying some seventy-five miles south of Changchun, the northern terminus of the South Manchuria Railway system, on the main line to Tairen is Tsupingku station. The undulating stretch of country between these two points lying in the basin of the Liao, which is fully cultivated, resembles within a month of harvest a brown sea, for the principal crop grown is kaoliang, the staple food of man and beast in these districts. There is no Chinese town at Ssupingkai; it is a Japanese Railway settlement, pure and simple, governed by the Japanese authorities. It is, however, of historic interest, for it was here that the armistice agreement was signed by the delegates of Field-Marshal Oyama and General Linievitch before the Portsmouth Treaty had been arranged; and now again it is destined to play an important rôle, for from this point Japanese colonists, traders and bagmen will pour in and prepare the way to secure a monopoly of the trading in Eastern Mongolia.

The present estimated population amounts to roughly some 6,000 souls, out of which some 10 per cent. are Japanese. It is only during the winter months that Shihpingkai shows any signs of commercial activity when produce is brought in here, as elsewhere, by native carts from the neighbouring districts, to be shipped southwards by rail. As it is the starting point for the trade marts of Eastern Mongolia, there is continually a stream of people arriving and going.

The present occupation of most of the Japanese residents with the exception of a few firms dealing in Japanese piecegoods and exporting of produce, is of a most despicable kind; medicine shops whose chief source of profit is the sale of morphia, pawnshops where extortionate interest is charged but no questions are asked as to where the goods to be pawned came from, gunshops where firearms and ammunition are sold to any one who can pay the price asked for, are to be found in the Settlement, and thrive at the expense of the natives.

The nearest Chinese town is Lishouhsien, situated thirty-five li north of Ssupingkai. Here a magistrate resides, under the jurisdiction of the Taotao of Taonanfu. The railway line will pass through Pamiencheng, a growing town boasting of 5,000 inhabitants on the main cart-road to Liaoyangchow. This latter city is one of the new marts in Eastern Mongolia opened up to international trade by virtue of the new Sino-Japanese Agreement. It stands on the right bank of the West Liao, which together with the East Liao form the dual head of the Liao River. It lies amidst a level plain sloping down on the western fringe, allowing this vulnerable portion of the town to ready flooding in time of heavy rain.

Forty years ago Chengchiatun was but a small village. The arrival of some Chinese interested in the cattle and horse trade marks the beginning of its growth. The immediate district is endowed with fertile soil, excellently adapted for agriculture, and the arrival of Chinese immigrants in increasing numbers has quickened the development of the place. In 1901 it was created a magistracy under the style of Liaoyang and five years later a river mart was opened near by at Sankiangkou, and this served to boom the junk traffic, whilst in 1913 it was made permissible for junks to go up the river a further seventy li beyond Sankiangkou, thus materially adding to its prosperity. The town has grown by degrees, and was not founded on a settled design, consequently there is a total absence of any shape of a design in building the town, and the layout of the streets is most irregular. From a village it was raised to a township, and from a township it has grown to a city. Its present population is somewhat under 40,000.

The city is some two miles in length and about a mile broad. There is no wall surrounding the town, but several of the produce dealers' and pawnbrokers' premises and compounds are enclosed with brick walls over 10 ft. in height, on which are mounted guns for protection against brigands. The principal Government Offices include the prefect's yamen, the tax-collectors' office, the Mongolian rent-collector's agency, the police station and the Court. Live stock fairs are held between the 8th and 11th moons of the old Chinese Calendar, but with the growth of agricultural produce the livestock trade has been universally affected.

The town is situated in the district often known by its Mongolian name, the Chelim region; it is linked up with cart roads on the north via Kiating (another of the new marts opened to international trade) with Taonanfu, on the south with Fakumen and Hsinmingfu, on the west with Chinchow via Paiyintalai (also now opened up to international trade) and on the east with Tsupingkai and other railway stations on the South Manchuria Railway. Thus the trade centre of the Eastern part of Eastern Mongolia is centred at Liaoyangchow, and with the construction of above mentioned railway section is the key to the mine of the latent natural wealth contained in Inner Mongolia.

The actual building of these fifty-two miles of iron road should proceed apace, for the country is flat and the only piece of work attended with engineering difficulty is the railway bridge over the Liao, which lies about a mile to the east of Liaoyangchow. There seems no doubt that owing to the natural resources of the district through which the railway will pass that it will be put on a paying basis as soon as it is completed. Liaoyangchow even before it become opened up as an International mart had a Japanese population of over 100 souls, and Samunchang a few Japanese of the pedlaring classes. No doubt these numbers will be increased greatly this year.

Ssupingkai-Chengchiatun Railway.—Mr. S. Hori, Acting Director of the South Manchuria Railway Co., Bureau of Technics, has made the following observations regarding the delay in getting this projected line under way:—

It appeared at the time of signing the Agreement that the first thing was to appoint the Director of the Railway on China's part, and that the appointments of the chief engineer and other principal officials were to follow before the work of construction was begun. No official appointment of the Director has yet been bulletined. As matters stand, it is unlikely that the construction work will be begun this Spring. Unless the appointment of the Director and the Chief Engineer takes place during the present month of February, the construction work may be delayed one year, and the time for opening the line to traffic correspondingly put off. No thorough surveys have yet been made and some time must be allowed for the purchase of construction supplies. In the mean time cold weather will return, making the starting of work impossible. —*Manchuria Daily News*.

Later intelligence reports the appointment of Mr. Wu-wu (Director of the Kirin-Changchun Railway) to the additional post of Director of the Ssupingkai-Chengchiatun Railway.

The South Manchuria Railway Co. is hard put to it for rails as it has used all rails in stock, and finds it difficult to obtain a fresh supply either from abroad or from Japan. The rails of disused sections have been taken up to meet the more urgent requirements. The Railway Company negotiated with the Government Steel Works, Edamitsu, for a supply of rails, and was refused, but Baron Nakamura (the Company's President), who had been the reorganizer and President of the steel works for 13 years, induced the Works to furnish about 30 miles of rails. As to the 20 miles of rails wanted for the extension of sidings, etc., orders have been sent to the United States. On their arrival these rails will be exchanged for part of the lighter rails now on the Railway lines and the latter will be used for sidings and at the Collieries.

Inner Mongolian Survey.—According to the Chinese organ of the Mukden Government, the scheme to construct a railway between Chinchow and Dolonor via Chaoyang and Jehol, about 367 miles in distance, has made good progress, and the first surveys have already been finished.

Kirin-Changchun Railway.—As negotiations are about to be opened at Peking over the Kirin-Changchun Railway Loan Agreement, the Japanese residents at Kirin are said to have passed resolutions to the following effect:—

China shall be asked to accept all the demands advanced by Japan when the negotiations for the Railway Loan were originally taken up. The Kirin-Changchun Railway shall be raised to a similar standard of efficiency as the S. M. Railway. The poles of the Railway service telegraphic system shall be utilized for the establishment of a telegraphic service between Changchun and Kirin, and the Japanese post office at Kirin shall be opened to telegraphic traffic, or else the Kirin Railway Station shall be made to take up public telegraphic traffic in Japanese *kana* syllables.

The resolution has been presented to the Foreign Office, Tokyo, and the Japanese Legation through the Japanese Consulate, Kirin.

S. Manchurian and Shantung Railway Agreement.—The through passenger traffic agreement between the South Manchuria Railway Co. and the Shantung Railway was signed on February 5. The Dairen Kisen Kaisha also signed and the actual opening of the through passenger traffic is expected to take place before the end of the month. The steamship lines available will be the S. M. R. Co. Dairen-Tsingtau-Shanghai route and also the Dairen Kisen Kaisha route.

SHIPPING

U.S. Building Ships.—American shipyards have under construction now more vessels than ever before were building in the United States, to add to an American merchant marine whose gross tonnage already is the largest in the country's history, said a report issued by the commissioner of navigation. Ninety-eight merchant vessels of more than 3,000 tons are being built or are under contract. These with many small vessels being constructed have a total tonnage of 761,511. The total tonnage of ships under the American flag, numbering, 26,888, Dec. 1, was 8,444, 258, a net gain of more than 50,000 tons since July 1. There was a net gain of 187 ships, despite 272 vessels lost, abandoned, and sold to aliens. Twenty-three came under the American flag from foreign registry and 436 were completed in shipyards.

American Naval Menace.—The *Osaka Mainichi* says self-preservation or protection can become a cause of war. The programme of expansion of the American army and navy is about to be carried into practice. The necessity for it is attributed to the opening of the Panama Canal and to the need of securing supremacy on the Pacific, and this is explained as a measure of self-preservation. But when a country with inexhaustible wealth like the United States begins to build a formidable army and navy, she cannot but become a menace to others. It has been the long cherished desire of America to establish herself in China on the pretext of solving the Pacific Ocean problem. If therefore the armament expansion is part of the Pacific problem, it cannot but be looked upon as a direct threat to this country.

Ferry Boat for Canton.—A 40 ft. motor ferry boat has been built by Messrs. Alex Ross and Co. in their yard at Kowloon for the Pak Hok Tong Launch Co. of Canton. The boat, which was designed by Captain Lukmanoff, and has been named the "White Crane," is engined with a Scripps 26 h.p. motor, and is provided with an electric starting system which also provides for the electric lighting of the boat. All the appointments are quite up to date, and the general design and seating arrangements present many practical novelties and improvements, all having special regard to the handling of boat and passengers in the crowded river between the Shameen and Pak Hok Tong. On the trials it accomplished a speed of 8.6 knots over the measured mile, which is considerably over the contract speed. The "White Crane" will be put into immediate service.

N.Y.K. to Raise Rates.—The N.Y.K. has decided that the freight rate in free vessels on the American line will be raised 20 per cent. from April 1. But the rates on valuable articles, less weight and bulk, will be unchanged. The charge of 100 pounds of raw silk is to be $2, hemp braid $1.87½ and waste silk 65½ sen.

Ice Breakers to Vladivostock.—A Chinese correspondent at Tientsin states that the Hai-ho Conservancy Board, having found it easy to keep open the river Pei-ho this year with two ice-breakers, has chartered the other two ice-breakers to the Kailan Mining Administration. These two steamers have gone to Vladivostok where they will be employed to assist the Russian ice-breakers in keeping open the two channels into the port, the one being used for ingress and the other for egress. The charter-price is not known.

Japan's Tonnage Decreases.—According to an investigation carried out by the Department of Communications, the total number of vessels which entered and left ports in Japan during the year 1915 was 8,975, with a total tonnage of 19,634,882. This is a decrease of 3,930,601 tons from that of last year.

Activity in Japan's Shipyards.—The shipbuilding industry in Japan is now in a very prosperous condition, all shipbuilding yards having orders to their full capacity. The number and tonnage of ships, which are now in the course of construction and for which shipbuilding subsidies have been granted are as follows:—

Name of Dock	Number of vessels	Tonnage
Mitsubishi Dockyards	10	41,299
Kawasaki Dockyards	8	38,586
Osaka Iron Works	14	42,340
Uraga Dock Co	5	10,640
Harima Dockyards	2	2,300
Fujita Dockyards	1	2,100
One Dockyards	1	1,250
Total	35	138,559

Besides, these shipbuilding yards are receiving large orders for future building, work on which has not yet been started. It is reported that the scarcity of shipbuilding materials is now being keenly felt, the present stock on hand being sufficient for only a very short period. The builders have to import the materials as the work advances, but the difficulty is that import from England is now practically impossible, while the American materials are either unsuitable for use in Japan because of the section length, or are too expensive. Vessels for transportation are also scarce. Already some shipbuilding yards are experiencing great difficulty in obtaining materials. Moreover, the present prosperity in this industry has caused a great demand for skilled shipyard laborers, especially for first class men. This has resulted in competition among the shipyards to secure these laborers. Consequently, wages have risen. The present rate is from one yen to one yen and a half per day, but it is expected that the rate will further increase in future.

Japan's Mercantile Fleet.—Japan now occupies third place in the world's shipping according to a writer in the Japan Times. Lloyd's Register apportioned the world's tonnage before the war as follows, in millions of tons:—

British	21	French	2¼
American	6	Italian	1¾
German	4½	Japanese	1½
Norwegian	2½	Dutch	1½

Russia, Sweden, and Austria each have a million, and Spain and Denmark slightly less. The biggest sailing fleet belongs to Norway, while Japan's large junk and schooner fleet is not included in the returns, which take count only of vessels over 300 tons.

Mr. Wakamiya, of the mercantile marine bureau of the Department of Communications, has made the following statement regarding Japan's increase in Shipping facilities:—

Prior to the outbreak of war, the total tonnage of mercantile ships in the world was about 49,000,000 of which some 14,000,000 tons must now be deducted as so many ships are either destroyed or detained in enemy ports, while many others are employed for military uses. Before the war, twenty-three ships on an average used to come to Japan monthly from Europe, but the number is today less than half, while the American route is almost monopolised by Japanese shipping.

At present there are eleven periodical sailings of Japanese ships, eleven special ships on the European service, while the tramp boats, owned by Japanese, plying from one end of the globe to the other, number over sixty aggregating 400,000 tons. Japan is now 3rd in rank in the world's shipping, in contrast to the seventh place she held before the titanic war broke out in Europe. The immediate need for Japan is experienced and well disciplined seamen for this enormous expansion of her mercantile marine.

Progress in Shipbuilding.—Japan now has 2,132 vessels over 20 tons with a total tonnage of 1,604,900 while the number of vessels over 1,000 tons is 416 with a total tonnage of 1,331,308. The details are as follows:—

Ships			Number	Tonnage
20 tons	to	100 tons	1,036	47,143
100 ,,	,,	300 ,,	438	80,602
300 ,,	,,	500 ,,	92	36,044
500 ,,	,,	1,000 ,,	150	110,403
1,000 ,,	,,	2,000 ,,	124	188,605
2,000 ,,	,,	3,000 ,,	120	296,017
3,000 ,,	,,	4,000 ,,	79	263,946
4,000 ,,	,,	5,000 ,,	27	119,067
5,000 ,,	,,	6,000 ,,	31	175,547
6,000 ,,	,,	7,000 ,,	13	82,078
7,000 ,,	,,	8,000 ,,	10	76,405
9,000 ,,	,,	10,000 ,,	6	57,039
Over 10,000 tons			6	72,604

It is interesting to note that all this fleet has been created since 1884. For a period of 218 years—from 1635 to 1853—the building of vessels over 50 tons net was prohibited, and it was not until the arrival of three U.S. ships at Uraga under Commodore Perry the government was awakened. A few ships of European type were built by some of the daimyos, but as the Japanese shipbuilders were ignorant of the proper methods they only imitated the outside appearance. In 1845 a Russian man-of-war was washed ashore and sunk by earthquake. The Russians, with the assistance of some Japanese shipbuilders, started building a wooden schooner at Heda,

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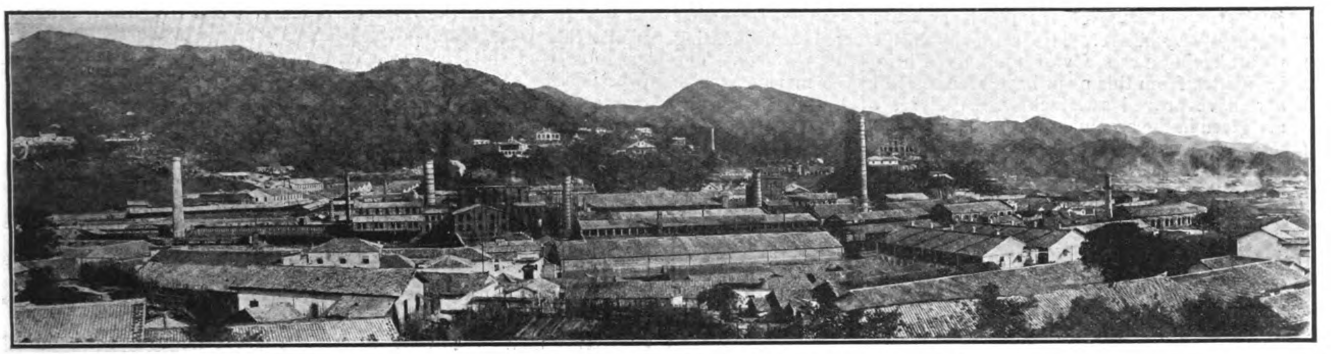


PANORAMA OF THE PINGSIANG COLLIERY OF THE HAN-YEH-PING COAL AND IRON COMPANY

THE PINGSIANG COLLIERY

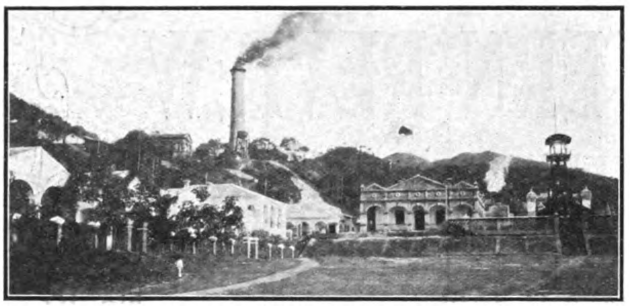
A Story of Early Mining Difficulties in China

The Pingsiang Colliery is situated in the Province of Kiangsi, close to the eastern border of the Province of Hunan. The locality has always been known to contain an immense quantity of coal, and the Chinese in the past dug into these deposits from the surface at points on the outcrops so far as their superstitions would permit. At this time of writing the viewpoint of the natives has been greatly expanded and fear of the earth dragon ascending from holes in the ground is no longer an excuse for backwardness in developing the mineral resources of the country. When the Pingsiang colliery was opened the trials and tribulations, were, however, constant and varied, as is recounted by Mr. Gustavus Leinung, the Manager. To open the mine some $3,000,000 were borrowed from Germany, but that loan has now been paid back and the property is entirely owned by the Han-Yeh-Ping Coal and Iron Company, though certain loans which were contracted after the Revolution of 1911-12 remain outstanding.

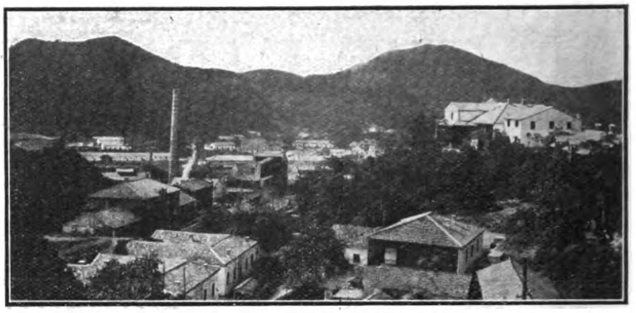
"It is a surprise to a stranger," writes Mr. K. P. Swensen, "to visit this mining camp. Riding over the railway from the Siang River to the mine, he is given a magnificent perspective of the typical Chinese landscape in a prosperous rice-growing section. From the mountain heights, irregular small ranges succeed each other into the valleys to blend with the foothills in a maze of terraced rice fields. One marvels at the thrift of the Chinese farmer and the intensive culture to which he is forced to resort. All this the traveller looks upon and wonders at the still crude methods of labor, when he suddenly finds himself thrust into the industrial city with its multitude of chimneys and substantial brick buildings, which have been built on such a modern scale by the Pingsiang Colliery Co. As the mine is in the heart of China, far from the source of machinery supplies and the like, it is necessary to keep complete repair shops as well as shops equipped to manufacture, as far as feasible, all necessary machines and appliances. This saves the time and expense incidental to ordering from abroad. There is a large round-house to accommodate the dozen or more locomotives and a large railway machine and repair shop. In the main machine shop are manufactured steam engines, compressors, pumps, lathes, and in fact almost everything in the heavy machinery line except electrical machinery. A foundry in connection turns out castings up to three tons weight.

CHANG SHOU-CHAN, THE COMPANY'S FIRST MANAGER

An important adjunct is a series of coke ovens along the railway tracks. These ovens are of the Otto-Koepe type, of which there are 300 in operation. Almost all the coke is supplied to the blast-furnaces of the Hanyang Iron & Steel Works at Hanyang The coal used consists of the fine material saved from the washing plants and runs not over 10% ash and under 0.05% sulphur. In appearance the coke resembles that produced



PINGSIANG COLLIERY—HEAD FRAME FOR MAIN SHAFT



GENERAL VIEW OF PINGSIANG

in the by-product ovens of the United States with a somewhat more silvery lustre. The company has erected a briquetting plant, having a capacity of 200 tons of briquettes per day. The briquettes from this plant have been tested in the marine service and have proved satisfactory. Analyses of the coal and coke are given in the accompanying table:

ANALYSES OF PINGSIANG COAL AND COKE

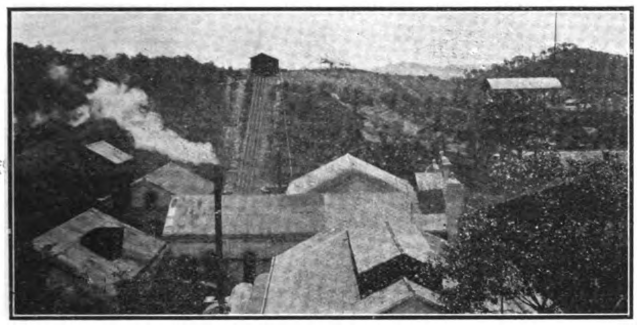
	Foundry Coke	Smelting Coke	Navy Coal	Washed Coal	Run-of-Mine Coal.
Analysis in the Crucible					
Fixed carbon	87.941	88.060	60.167	59.921	54.118
Volatile	——	——	30.290	24.240	23.490
Combined water	1.119	0.840	1.953	1.149	1.392
Ash	10.940	11.100	7.590	14.690	21.000
Elementary Analysis					
Carbon	83.520	84.252	79.239	75.330	70.758
Hydrogen	1.067	0.744	5.099	4.891	4.012
Sulphur	0.506	0.618	0.547	0.522	0.527
Oxygen	1.833	1.480	4.102	2.241	1.107
Nitrogen	1.015	0.966	1.470	1.169	1.204
Hygr. water	1.119	0.840	1.953	1.149	1.392
Ash	10.940	11.100	7.590	14.690	21.000
Analysis of the Ash					
Silica	62.040	60.820	49.040	60.520	65.700
Alumina	26.360	27.640	25.690	24.979	24.890
Oxide of iron	5.960	6.100	16.430	3.840	3.770
Lime	3.410	3.200	5.340	6.340	2.860
Magnesia	1.770	1.850	2.800	3.400	2.220
Melting Point of the Ash					
The ash melted at °C.	1350	1450	1200	1250	1355
Heating-Power and Evaporative Efficiency					
Capacity of heat (Cal.)	6977	6962	7690	7402	6815
Quantity of steam at 100°C. produced by 1 kg. of Pinghsiang coal from water at 0°C. (kg.)			12.07	11.62	10.69

The mine is opened by a principal adit 3000 metres in length, and by another short adit which connects with a main working-shaft 170 metres in depth, and a ventilating shaft 110 metres deep. The shafts are round in section, brick-lined, 4½ metres and 4 metres respectively in diameter. Recently a large Fraser & Chalmers hoisting engine with reel and flat rope has been installed preparatory to deep sinking. At the present time all the coal mined comes out through the adits. The beds are now being opened continuously downward and the shafts are to be increased in depth as required. In the main haulage ways trains of cars are drawn by electric locomotives of 10, 40, or 50 hp. each. These were the first electric locomotives used in China and were started in the year 1906.

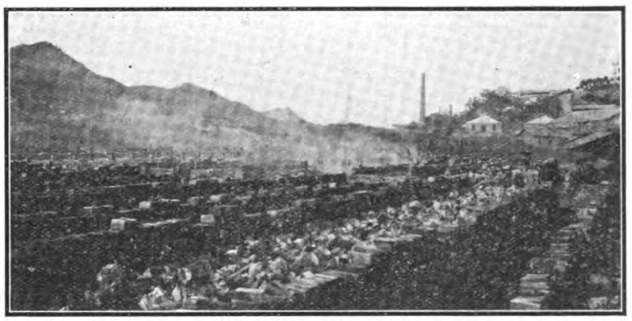
A feature of the surface operations is two coal-washing plants that were found to be necessary in the production of a grade of coal suitable for coking purposes. The coal is sent over shaking screens which give 4 sizes after the lump is run off over a 30 mm. screen. The material is then washed through a series of coarse to fine jigs, the light products of which all go to the coking ovens while the waste is discarded. This waste is given to independent Chinese coke manufacturers who re-wash the material by hand and turn out large quantities of good grade coke in simple rectangular ovens. This coke is sold for fuel. Fire-bricks of all grades and sizes are manufactured here and are of use especially for the coking plant and the furnaces in the steel works at Hanyang. A large amount is sent into the Oriental market and the demand for the brick is steadily increasing.

The country rock consists mostly of soft sandstone, and in the mine itself is found a hard limestone with many bands of slate and shale, as well as a large amount of soft clay partings in the coal seams. A great amount of development has been accomplished, and while the real life of the mine is largely conjectural, workable coal reserves have been developed to an extent that gives assurance of a supply that will last several hundred years with an output of 1,000,000 tons annually. The coal is bituminous, there being a hard and a soft variety. The hard coal is found in the smaller seams, those that are worked running from 15 to 75 centimetres in thickness. For the extraction of this coal it is necessary to take out a large amount of slate, most of which cannot be used for filling, but must be conveyed to the dump on the surface from the mouth of the mine. There are 8 inclined tracks running to the slate dumps which are already of immense size. Such a mine as this could not be worked profitably in the United States on account of the high percentage of slate since the labor cost and the cost of washing would be prohibitive. In China, however, miners are paid less than 13 cents gold per day, so that the labor cost is relatively low. There are three hard coal seams of large extent having a pitch of about 12 degrees, which are from 3 to 6 metres apart. They are mined by the ordinary long-wall method, in which the entries are run with the dip and along the strike and all the coal is extracted while advancing. This system of long-wall mining is also used in the soft coal seams, of which there are six. These seams vary in thickness from 3 to 12 metres. Drifts are run for the purpose of ventilation every 20 to 25 metres along the haulage-way and connection made about 70 metres distant from the main gangways to provide the air circulation. In the thickest seams blocks are removed to 3 metres in thickness, and, while the roof is supported with props, the open space is filled with waste and the second cut proceeded with.

The greatest difficulty is found in the maintenance of haulage and passage-ways, because of the tremendous pressure. This makes timbering an expensive item, for the timbers must be constantly replaced. No attempt is made to relieve the pressure on the main timbers by providing auxiliary sets as is sometimes done for swelling ground in America. The roof is allowed to fall until it becomes low enough to interfere with the workmen, when it is cut down and new sets put in. This happens as often as once every four months in certain parts of the mine. The main haulage-way is lined with brick with an



PINGSIANG COLLIERY—VERTICAL SHAFT AND SLATE DUMP



PINGSIANG COLLIERY—CHINESE COKE OVENS

arched roof where the pressure is greatest. At other places the roof is supported by steel rails and lagging with brick walls. In the endeavor to maintain permanent haulage-ways where the pressure is great, as many as 10 courses of brick have been used in the arches and in many cases these have failed and crumpled under the pressure. This is the only way the engineers have of ascertaining the relative pressure although such trials are very expensive. In the matter of handling the labor, the management has found it an advantage to let out the greater part of the work by contract to Chinese foremen. It is a policy that is found to be particularly successful with the Chinese. They must be driven to doing right and habitually disobey orders unless constantly watched. The mining of the coal is done at a stipulated price per ton, varying with the conditions of mining, and the contractor must guarantee a minimum of 10 to 12% ash, before his output is accepted. Timbering and tunneling is done at an agreed price per metre. The coal and coke are dumped into steel cars and conveyed over standard track to the port of Chu Chow at which point, along the river, are lined up steel and wood lighters, with barges and junks of various description. These are towed to Hankow by the company's tug-boats in lots of about 1200 tons. The handling of the coal affords an instance of how necessary it is to adopt methods to suit conditions in a strange country. There is no need for the use of large capacity automatic-loading devices such as are used in America, for in China labor costs but about one-twentieth of what it does in America. The coal, after being dumped on the ground along the track in great piles, is conveyed by coolies who use carrying-poles with baskets attached, holding perhaps a bushel each. There are several hundred of these men constantly at work moving from 1800 to 2000 tons of coal and coke per day from the railroad into the barges.

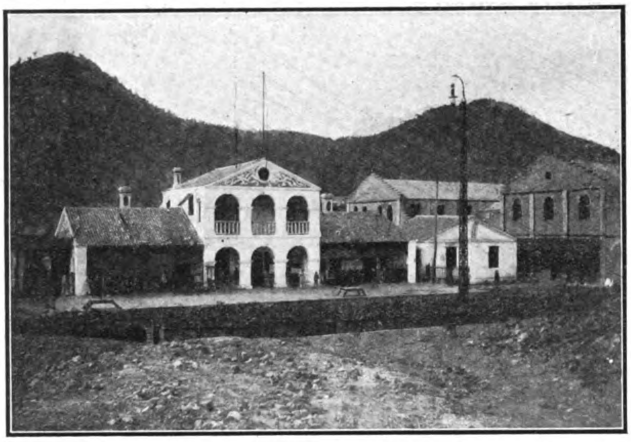
Transportation is handicapped during the winter season because of low water in the upper Siang River. This difficulty will be eliminated as soon as the railroad now under construction is built. A feature of the Pingsiang Colliery Co.'s operations is the growth and progress, these being evident in the output, in the resultant enlargement and improvement of the plant. The engineers and managers endeavor to turn out highgrade products. The success of the company furnishes an example for future undertakings and gives an insight into what may be expected from the eventual development of China's immense mineral and coal deposits."

The Early Difficulties

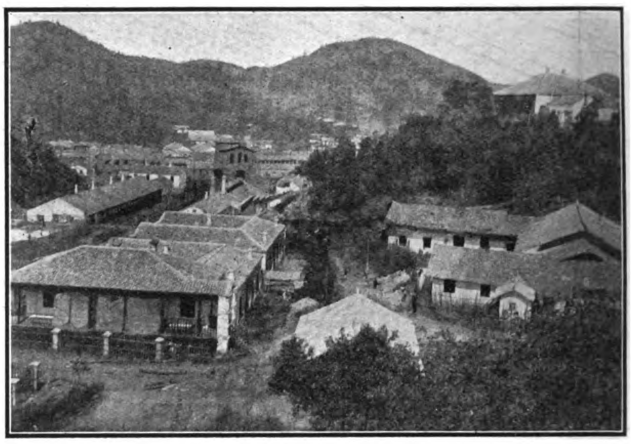
An interesting history of the mine has been furnished us by Mr. Leinung. He first went up to Pingsiang in 1896 for preliminary investigations, but it was not until 1898 that the mining operations really started. Mr. Leinung was alone for the first two years and had to do the geological, survey, planning and architectural work. Upon his first arrival at Pingsiang he was an object of awe and amazement to the natives who had never seen a European. All sorts of beliefs were held about him. He was said to have three eyes, one at the back of his head, and it was believed that he could see deep into the bowels of the earth and detect the treasures there. When he entered Pingsiang for the first time in 1896 the natives were sitting on the roofs of houses to see him. He was put into a small room in an ancestral hall in which there was a grated window, and the people were allowed to come along in squads of 10 or 12 to have a look at him, as though he were a rare zoological specimen. The idea was to make them accustomed to the appearance of a foreigner. During the first year there were always 200 soldiers around Mr. Leinung. He was not allowed to leave his quarters and had strictly to obey orders. At this time there was very strong anti-foreign feeling in Hunan and he had to journey to Pingsiang via Nanchangfu and Kiukiang as Hunan was forbidden to foreigners. Two years later he had to leave owing to riots and murders of missionaries.

When Mr. Leinung journeyed to Pingsiang through Hunan in 1900 the windows of his house boat were shrouded with blinds as he passed Changsha so that no one could see that there was a "foreign devil" within. He had a very exciting time for the first year, with the strong anti-foreign sentiment prevailing all round him. On one occasion one of his servants came to him with a placard which had been pasted up outside his house urging the people to kill the foreigner and all the Chinese with him at Pingsiang, and the servants, not unnaturally, became very frightened.

At first he employed men from Luyang as miners, then men from Hunan, and eventually men from the Tayeh iron ore mines; men whom he knew. In each case, however, the result was unsatisfactory. The local men were opium smokers and did not want to work regular hours. The men from Luyang were a disorderly, lawless lot, and those from Tayeh thought that they could draw their pay without working. Very often Mr. Leinung was almost despairing and felt inclined to drop the attempt to open up the mine. For the first six months he had depended upon his interpreter, but the latter had failed to handle the men properly. In the meantime Mr. Leinung had learnt a little Chinese and he determined to put the interpreter on one side and negotiate himself with the better men whom he had picked out. He asked these men to work by contract which they refused to do before, preferring payment by the day. Mr. Leinung took the most reasonable of the men aside and showed them that they could make more money by working by contract. They agreed, and gradually he succeeded in making a start on this basis. In the beginning he followed the invariable practice in China and took a compradore to manage all the details. The unfortunate result was that as the work grew greater and the number of miners larger the compradore could not personally superintend his men and get the proper amount of work out of them. The contracts which Mr. Leinung made with the contractor or compradore were drawn up on similar lines to those with which Mr. Leinung was familiar in his own country, but the contractor had engaged his men on daily wages and could not supervise their work properly. The result was that he began to lose money and Mr. Leinung had to point out to him that it was impossible for him (Mr. Leinung) to pay more than was named in the contract. The contractor got deeper and deeper into debt with his men. It was now approaching Chinese New Year, when, as is generally known, all Chinese are supposed to pay off their debts. The miners insisted upon the contractor paying them, but as he had no money he told them that the fault was with the foreigner who did not pay him enough money. Then came the first strike at the Colliery. The men beleaguered Mr. Leinung's house and



PINGSIANG COLLIERY—RAILWAY STATION AND THE WORKS YARD



PINGSIANG COLLIERY—HOSPITAL AND OFFICE BUILDINGS

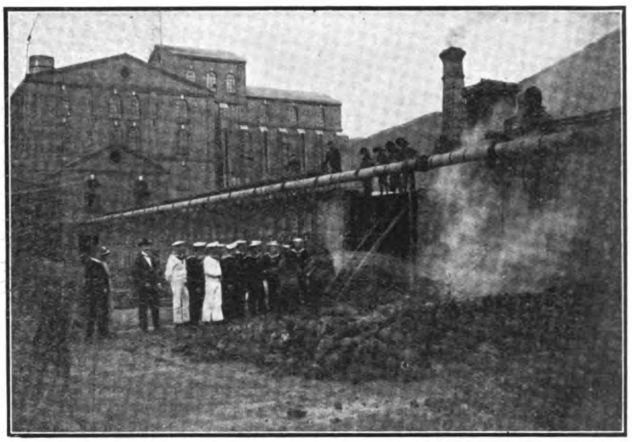
demanded money, which of course he refused to pay. That strike lasted for three days. Mr. Leinung took advantage of it to break the power of the contractor, because he saw that it would not be advantageous to do the work through a single contractor. He decided that it would be better to have individual contracting parties at the different working places.

At this time he had about 200 miners and about 20 working places, most of which, of course, the contractor could not superintend, not being an experienced miner. At that time with so small a body of men Mr. Leinung knew almost every one individually and knew their capabilities—good and bad. He took the opportunity to persuade the workmen that it would be to their interest to take contracts for a single working place by themselves. He offered them in the last moon of the year for that month such contracts that they could earn as much in one month as the contractor would pay them in four or five months. Mr. Leinung wanted to gain his point and that was what dictated this offer. Many of the better miners were allured at the prospect of earning so much money and consented to take the individual contracts. On the third day he got all of the men who had accepted the contracts into his office, made them an advance payment and had the necessary tools delivered to them. Mr. Leinung and his assistant were in the office at 9 o'clock making the final arrangements with the miners and just when he thought that everything was satisfactorily arranged some miners came in with bleeding heads. These were some of the men with whom he had already settled the individual contracts and who had gone to work. These men kowtowed and asked to be excused for not going on with the contract as they would be killed by the other miners if they did. Mr. Leinung decided upon quick action and told his interpreter to tell the soldiers to arrest the men who had attacked the contractors. The soldiers refused to venture among the crowd, being afraid. That made Mr. Leinung more furious and he declared that if the soldiers would not go he would go himself. He was warned not to do so as the people were in an ugly mood and he would only endanger his life. He insisted upon going and armed only with a strong miner's oak stick and accompanied by the assistant engineer he set off for the men's quarters. Some soldiers followed. When he reached the men's quarters he was saluted by yells and threats and the position was anything but pleasant. But knowing that if he showed any fear he was lost he summoned up all his courage and went right up to the mob and, taking an elevated position, began to address them in as good Chinese as he could command. He knew enough to make them understand. In his address he pointed out that after he had made satisfactory arrangements with the men who really wanted to work some mischief-makers had attacked the men and threatened others who wished to work. Moreover, he told them, the contractor had not been able to pay them because he was not able to get them to do the amount of work corresponding to the daily wage he agreed to give them. He had himself been a miner and they could not fool him. The contracts given to the contractor were fair and the amount of work could be done. They were similar to contracts in foreign countries where the miners made from $ 1.50 to $ 2.50 per day. The contractor had made nothing out of the contracts, but had lost money and was unable to pay them simply because of their own laziness. He again offered them individual contracts which would enable them in one month to make up all the money the contractor owed them. At 6 o'clock the following day he would go to the mine and he expected to see them in their working places and then final arrangements would be made.

When Mr. Leinung finished his speech there was shouting from some quarters, and demands that before there were further negotiations he should pay over the money owing by the contractor. He knew the men who called out as a lazy lot of useless fellows who had always been an encumbrance. Accordingly he caught hold of the one nearest by the queue, made the others—about six in number—come and stand beside them. Then he told them flatly that they were a set of useless rascals and that his offers were not for them. He had no use for them and told them that they had to clear out. He ridiculed them, and the other Chinese, who knew that Mr. Leinung had judged fairly about the capacity and character of these men, began to laugh at them, and the victory was practically won. The next morning he found the men in the working places and by noon had everything settled and could leave the mine.

A new start was made the following day with satisfactory results. Everything went well for about a year, the men making good wages. The mine grew bigger and a much larger number of men were employed. By the time Chinese New Year came round the gang leaders had gradually developed into contractors, who ceased to work themselves but fed and housed the men and "squeezed" them. These gang leaders only visited the mine on the first of the month to make contracts and on the fifteenth, pay day, when they appeared in gorgeous silk attire, being carried from Pingsiang city in sedan chairs. The rest of the month they spent enjoying themselves in the city, letting the men work for them. This did not please Mr. Leinung at all and he realized that he now had to break the power of these contractors. The only way in which the power of the contractors over their men could be broken was by quartering the miners in houses belonging to the mine and feeding them at the cost of the mine. In the first place, therefore, huge mining quarters with kitchens and stores had to be built. Then the individual control and payment of the miners had to be provided for. The quarters were almost completed by the next Chinese New Year and the miners were informed that every one should get his pay according to the work done, and that no man would have the right to squeeze other men. Early in the New Year he received a written protest from the 63 gang leaders in which they told him that all the miners protested against the innovation as they were afraid that they would not get proper quarters and good food. Several hundred of the miners, the protest declared, would go on strike

PINGSIANG COLLIERY—MAJOR BOWLEY, UNITED STATES MILITARY ATTACHÉ, AND MANAGER LEINUNG (IN WHITE) AFTER A VISIT OF INSPECTION



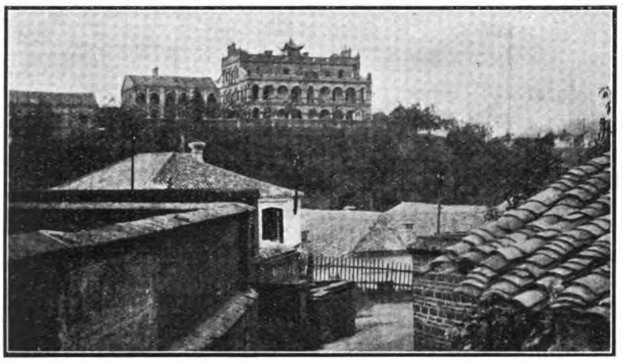
PINGSIANG COLLIERY—COOLING COKE FROM THE OVENS

if this innovation was to be made. As Mr. Leinung had built the quarters and had made all preparations for feeding the men he was naturally very angry at this opposition. As a matter of fact he knew that the greater proportion of the miners welcomed the innovation and were rejoiced at the prospect of being no longer squeezed by the gang leaders. It became necessary to find out who were the ringleaders in connection with the protest and to make an example of them. Early in the month when work was commenced he went from gang to gang finding out the men who had instigated the protest. One man who was charged with being a ringleader became frightened and said that he was compelled to sign the protest, although he did not wish to do so. It leaked out that on the fifth day of the New Year the miners had been assembled at a temple near by and that one of the gang leaders had addressed them telling them that the proposed innovation was against their interests and that they should combine to protest against it. The usual thing happened; the crowd went with the agitators and the aid of a *literati* had been invoked to draw up the protest. They all swore not to betray each other.

Mr. Leinung asked the men at the head of each gang whether they would work under the new system and they all agreed to do so if the others did. After three days the list of men who had thus agreed included most of the gangs working in the mine. Then Mr. Leinung went to the man whom he had all along suspected to be the ringleader, paid him off and told him to leave at once. The next month the miners' quarters were ready and the innovation was made without a hitch. The miners liked it immensely.

All went well for another year, but the number of miners and the output steadily increased and the cupidity of the miners was again stirred. They began to pay no attention to the quality of the stuff mined and expected to be paid for anything they sent out. There was constant trouble about this, and it became evident that something would have to be done. Mr. Leinung went to Europe about this time with Dr. V. H. Lee to assist him in matters connected with the Hanyang Iron Works, and during his six months' absence things had to be left to the assistant engineer, who had no knowledge of how to deal with Chinese. Before leaving, however, Mr. Leinung gave him full instructions that all coal that came out of the mine should be taken to an assembly station. He had this arranged so that on his return the assembling of the coal could be started. Some of the seams are pure while the miners turned out stuff with 45 per cent. of ashes as coal and the coal washeries were not sufficient to deal with it. During Mr. Leinung's absence conditions became worse among the miners. Soon after his return from Europe the contracts were fixed at so much per ton or per truck for coal containing a reasonable average percentage of ashes and for every one per cent more ashes one or more cents was to be deducted from the contract price per unit. He had proved to the men that they could turn out stuff with not more than 20 per cent. of ashes and had told them that he would give 20 cents per truck and deduct 1 cent for every one per cent. more than 20 per cent. of ash so that if there were 40 per cent. of ash they would get nothing. During Mr. Leinung's absence the engineer in charge does not appear to have handled matters very judiciously and he was dismissed immediately after Mr. Leinung's return from Europe. This meant that he had an assistant new to the place and conditions, when this rule was introduced. The new man was eager and energetic and anxious to show his ability. The first month the new rule came into force Mr. Leinung was called to Shanghai, so that he was absent when the payments for the month had to be made to the miners. Now the miners had ignored the rule and had continued to produce dirty coal, with the result that when pay-day came they had no wages to draw. There were about 2,000 miners employed at this time. Not unnaturally when they were told that they had earned nothing they were very discontented. The new man handled the situation injudiciously and the miners became enraged. They sent a deputation to his house and they complained that if they got no money they could not live or send money to their families. This discussion took place outside the engineer's house and he became frightened at their attitude and went inside. Stones were thrown and this was the signal for a general attack on the houses of the foreigners. Windows and furniture were smashed, and the situation became serious. The acting Chinese mine manager, the mine manager being absent, gave orders that the engineers should escape to the railway station where a locomotive was ready to take them to Liling, the then terminus. This they succeeded in doing, and in the meantime a telegram was sent to Mr. Leinung telling him of the disturbances at the mine. He was very anxious for the safety of his men and asked his Consul-General what to do. The despatch of a gun-boat was suggested, but this idea was not adopted and Mr. Leinung himself started to return to the mine. In the meantime the old manager had returned. Being a sagacious man he succeeded in appeasing the miners, and the engineers who had fled were able to return to the mine before Mr. Leinung arrived. None of them, however, was allowed to enter the mine before he came. When he arrived he told the men that it was not his intention not to give them any money, but they must understand that coal and not stone was wanted. He would prove to them by taking samples at each of the working places that it was possible to produce clean coal. As Mr. Leinung had great influence with the miners and was looked upon as the "Father of the Mine" the men acknowledged the force of what he said and a compromise was arrived at. It was not, however, safe to let the other foreigners go into the mine for several days. The men were treated more leniently on the next pay-day, and they gradually became accustomed to the new rule and the percentage of ash was reduced from 40 per cent to 20 per cent.

One great mistake had been made whilst Mr. Leinung was away in Europe and that was allowing too many miners



PINGSIANG COLLIERY—ADMINISTRATION BUILDING

PINGSIANG COLLIERY—LOADING COAL FROM CARS TO BARGES

to be employed in the mine and also allowing eight hour instead of twelve hour shifts. It became necessary to rectify the hours of the shifts in order to get more work out of the men, and also to reduce the number of miners. The amount of work done per head was less than one-fifth of what foreign miners could do. Mr. Leinung was convinced that he would get much more work out of the men if he reverted to the twelve hour shift and reduced the number of men. This was in the year 1906. The men were quite satisfied to revert to the 12 hour shift, which had been the original system. In June, 1906, the 12 hour shift system was reintroduced. This was the time of the great floods in Hunan, when the water was up to the roofs of the houses in Changsha. It rained from October, 1905, to June, 1906, and the water in the mine greatly increased. Sufficient provision in the way of pumping plant had not been made, but what pumps there were kept working night and day. No time could be spared for any repairs to the pumps and there was a constant danger of a breakdown.

On the evening of June 10, 1906, when Mr. Leinung was at dinner the engineer in charge of the mine pumps came in and declared that the mine was lost as two pumps on the lowest level had broken down and it was impossible to get them repaired. After many days of ceaseless toil the danger was averted, but on pay-day a big strike among the miners who objected to the reversion to the twelve hour shift and to the dismissal of some 500 miners, was announced, and which lasted for three days during which time of tension a locomotive with an empty car was in readiness for the foreigners to make a start at any time.

On the fourth day work was resumed. The miners had consented to go back to the 12 hour shifts, but the foreigners were warned that if they attempted to introduce any other innovations all the miners would go on strike. Everything went on smoothly for the next few months, but in November troubles broke out in the neighbourhood and a revolution was apprehended in the country north of Pingsiang city. That was at the time of the Triads rebellion. Placards were posted on the walls of Liling and Pingsiang calling upon every one to rebel against the Manchu Government and every day decapitation of suspects took place at Liling and Pingsiang. Rumours were spread at that time to the effect that foreigners were getting the eyes of Chinese children to use as medicine. On the night of December 7 all foreigners were urged to leave that night. A locomotive and car were waiting at the station. The rebels had already taken a place about 90 li distant and were then on the march for Pingsiang city. The path they would follow lay for the last 30 li from Siangtung along the railway line, and it was to be feared that they would burn the timber bridge at Siangtung. A little after 2 a.m. they started, expecting to find the bridge at Siangtung in flames, or to meet the rebels on the way. The foreigners carried rifles for their defence, if necessary. The necessity fortunately did not arise, and they got safely to Changsha, where the party stayed for a month on house boats. During this month they received word from time to time from the colliery that the manager had taken energetic steps to secure peace and that soldiers had arrived from Changsha and Wuchang. Military law was prevailing at Pingsiang and decapitations were going on by the dozens day by day.

About January 5 they started back to the mines, and on arrival found that only 300 out of 2,000 miners were left though actually the mine itself had suffered no damage except the interruption of output. Work was resumed with a better class of miners and the undesirables had been got rid of by this disturbance.

From this time there was steady progress at the mine, and the number of men and output grew bigger and bigger as the men grew more experienced under foreign training. Nothing happened to interfere with the normal course of events until the revolution of 1911. This of course brought the foreigners into a critical position. They had heard of the rebellion at Wuchang and all sorts of rumours were afloat. They did not know what had become of the foreigners at Hankow. Then they heard that the disturbance had spread to Changsha and on October 22 at 9 p.m. the foreigners were warned that as Changsha was in the hands of the revolutionaries and no one knew what might happen to foreigners they must leave. They left at 3 a.m. and on the morning of October 24 they arrived at Hankow.

The affairs of the company were naturally in great confusion. Sheng Kung-pao had been cashiered and had escaped from Peking to Tsingtao; the Hanyang works were stopped on account of the fighting and all the tugs and lighters had been seized by the revolutionaries. There were no funds in hand. A temporary office was opened in Shanghai, all the miners were paid off, only the officials and a sufficient number of men to keep the mine in order being retained. The output, of course, was stopped entirely and only the main galleries were kept in repair. It was only due to the help given by Japanese capital that the mine was saved in this way. No other foreign capital could be obtained at that time. After having settled matters satisfactorily at Pingsiang the Chinese manager went to Shanghai and after consultation it was decided to discharge all the foreign engineers of the Hanyehping Works and the colliery, and most of the foreigners left for Germany in January, 1912. Mr. Leinung remained in Shanghai to watch developments, and later received telegraphic instructions to re-engage only five of his former assistants instead of twelve as had been arranged, on account of fresh troubles having arisen at Pingsiang. The natives in the vicinity of the mines had encroached upon the Company's property. They had opened a good many native mines in the Company's coalfield, although the first Chinese manager had taken great pains to buy out all the native mines within the field in the first years, and everything was in confusion as a result of the revolution, none of the former rights obtained from the Manchu Government being recognised. Every province wanted to be independent of the Central Government and in such conditions it seemed very doubtful whether it would be worth while resuming work at the colliery. However, at the beginning of April, 1913, they were able to return and to start work. It took some time to get the mine in order again, but this was done at last, and at present the output is about 3,000 tons per day.

time comes for nationalization, refund the capital loaned by the American financiers.

Commenting on the extension of the agreement with Messrs. Samuel and Company the *Peking Daily News* says:—

"The terms agreed upon have the full support and approval of the Chinese Central Government as is evidenced by the fact that the Wai-chiaopu have officially notified the British Minister in Peking, who has been requested to record the details for future reference. The Minister of Finance and the Minister of the Interior, both of whose signatures were appended to the original "Hankow Improvement Loan" Agreement in September, 1914, on behalf of the Chinese Government, have also been notified of the new terms agreed upon.

"Under the original agreement of September 19th, 1914, the existing Hankow Electric Light & Waterworks Company was hypothecated to Samuel & Co., Ltd., as one of the collateral securities for their Loan. The fact that the Chinese Government have now entered into an undertaking with Samuel & Co., Ltd., to purchase and nationalize the Hankow Electric Light & Waterworks Company through the flotation of an Internal Domestic Loan goes to prove the seriousness with which the Central Government view the future importance of the Hankow Improvement Scheme. Once the Internal Domestic Loan has been floated and the purchasing transaction has been completed, the Electric Light & Waterworks will become the sole property of the nation, with the profits derived, which we understand average well over three hundred thousand annually, becoming still another source of income for the country's exchequer. There seems to be no reason why the existing Electric Light & Waterworks should not be under state control, always provided proper management is arranged for, and in arriving at their decision the Chinese Government appear to have agreed to a course of action which calls for nothing but congratulations. Foreign capital is always welcome for the encouragement and development of industry and commerce, but if Chinese capital is available so much to the advantage and credit of the country."

CHINA'S RAILWAYS IN 1915

From the following tables it is possible to gain an accurate idea of the financial situation at the end of 1915 of the Chinese railways now operating. This is rendered possible owing to the adoption of the unified system of accounting recently introduced by the Ministry of Communications—a system which is perhaps the most complete of any in use in the world. Before the system was elaborated by the special commission appointed for the purpose accounts varied as did the railways and it was never possible to make even an approximately accurate comparison of the working of the various lines. Each line had its own method of accounting, and when it is remembered that some of the lines are British, others Belgian, others French, others German and a few Chinese it may be realised how great a variety of systems were used. This has all been done away with now, and the new unified system is employed on all lines to the distinct advantage of the country and the satisfaction of the public who may wish to make comparisons. The tables given below are the first issued under the new system and the figures given are derived from reports based on headings which permit of no juggling of figures to swell receipts or diminish expenses or in any way to confound the investigator. An interesting development of the introduction of the system is the application by private railway companies for the forms so that they may be adopted, it being recognised that their employment will in the long run diminish the irregularities that have prevailed in the past.

In connexion with the tables given below it must be mentioned that the estimates were prepared in 1914, before the war, which accounts for the estimate of receipts being high and expenses low. It is more gratifying, therefore, that the receipts still show an increase, despite the disabilities caused by the war, particularly as the cost of all kinds of materials rose greatly in price.

Statement of the approximate totals of revenues and incomes of the Chinese Government Railways during 1915 as compared with the estimates.

Lines	Estimated figures	Actual receipts	In excess of the estimate	Less than the estimate
Peking-Mukden	$12,672,400.00	14,768,000.00	2,095,600.00	
Peking-Hankow	16,681,100.00	16,560,000.00		121,100.00
Peking-Kalgan	2,668,566.00	2,721,500.00	52,934.00	
Kalgan-Suiyuan	905,084.00	880,940.00		24,144.00
Tientsin-Pukow	8,063,006.00	8,298,000.00	234,994.00	
Cheng-tai	2,416,125.00	2,116,549.71		299,575.29
Taokow-Chinghwa	593,335.00	633,000.00	39,665.00	
Shanghai-Nanking	3,484,500.00	3,436,800.00		47,700.00
Shanghai-Hangchow-Ningpo	1,878,000.00	2,070,000.00	192,000.00	
Canton-Kowloon	917,380.00	874,000.00		43,380.00
Kirin-Changchun	634,857.00	970,912.00	336,055.00	
Chuchow-Pingsiang	726,489.00	690,200.00		36,289.00
Canton-Samsui	530,325.00	851,568.00	321,243.00	
Kaifeng-Honan	1,160,502.00	1,154,600.00		5,902.00
Changchow-Amoy	38,030.00	41,080.00	4,050.00	
Total:	53,368,699.00	56,067,149.71	3,276,541.00	578,090.29
Balance			2,698,450.71	

Statement of Operating and Interest Charges of Chinese Government Railways for 1915 as compared with the estimates.

Lines	Estimated Figures	Actual Expenses	Balance Less than the estimates	In excess of the estimates
Peking-Mukden	$6,779,368.00	7,735,000.00		955,632.00
Peking-Hankow	10,252,681.00	10,700,000.00		447,319.00
Peking-Kalgan	2,318,858.50	2,052,700.00	266,158.50	
Kalgan-Suiyuan	1,441,022.20	999,806.20	441,216.00	
Tientsin-Pukow	9,824,124.00	11,051,000.00		1,226,876.00
Chengtai	2,001,434.00	2,021,336.00	70,098.00	
Taokow-Chinghwa	917,816.00	882,000.00	35,816.00	
Shanghai-Nanking	3,962,500.00	3,928,600.00	33,900.00	
Shanghai-Hangchow-Ningpo	3,006,000.00	2,371,000.00	635,000.00	
Canton-Kowloon	1,775,430.00	1,739,582.39	35,847.61	
Kirin-Changchun	1,374,534.00	1,447,999.00		73,465.00
Chuchow-Pingsiang	647,638.00	764,400.00		116,762.00
Canton-Samsui	305,416.00	579,067.00		273,651.00
Kaifeng-Honan	1,502,384.00	1,442,700.00	59,684.00	13,742.00
Changchow-Amoy	188,258.00	202,000.00		
Total:	$46,387,463.70	47,917,190.59	1,577,720.11	3,107,447.00
Balance				$1,529,726.89

Statement of the approximate balances between Receipts and Expenses (including interest and all other charges) of Chinese Government Railways for 1915.

Lines	Receipts	Expenses	Balance Profit	Balance Loss
Peking-Mukden	$14,768,000.00	7,735,000.00	7,033,000.00	
Peking-Hankow	16,560,000.00	10,700,000.00	5,860,000.00	
Peking-Kalgan	2,721,500.00	2,052,700.00	668,800.00	
Kalgan-Suiyuan	880,940.00	999,806.20		118,866.20
Tientsin-Pukow	8,298,000.00	11,051,000.00		2,753,000.00
Chengtai	2,116,549.71	2,021,336.00	95,213.71	
Taokow-Chinghwa	633,000.00	882,000.00		249,000.00
Shanghai-Nanking	3,436,800.00	3,928,600.00		491,800.00
Shanghai-Hangchow-Ningpo	2,070,000.00	2,371,000.00		301,000.00
Canton-Kowloon	874,000.00	1,739,582.39		865,582.39
Kirin-Changchun	970,912.00	1,447,999.00		477,087.00
Chuchow-Pingsiang	690,200.00	764,400.00		74,200.00
Canton-Samsui	851,568.00	579,067.00	272,501.00	
Kaifeng-Honan	1,154,600.00	1,442,700.00		288,100.00
Changchow-Amoy	41,080.00	202,000.00		160,920.00
Total:	56,067,149.71	47,917,190.59	13,929,514.71	5,779,555.59
Net Profit			$8,149,959.11	

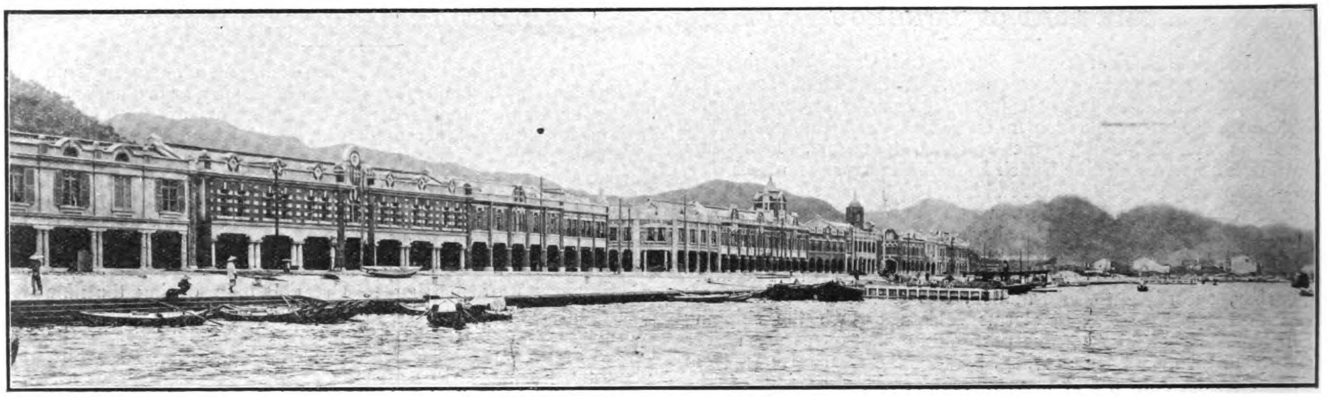
So far reports for the individual railways for the year 1915 have not been completed and the only reports available that have been produced in accordance with the regulations for the unification of accounts are for the half year ending June 30, 1915. At that date the Government Railways in operation in China totalled 5,701.47 kilometers, in addition to which there were 241.83 kilometers and 2,399 kilometers or what are described as Concession Railways.

The rolling stock in operation at that period was 627 locomotives, of which 162 were passenger, 330 freight and 140 shunting. There were 823 passenger carriages, 103 being first-class, 214 second-class, and 576 third-class.

Passengers to the number of 13,000,000 were carried during the six months, the bulk of that being third-class, the percentage being 96.54, while the second-class passengers amounted to 2.76% and the first-class 0.7%. The revenue from this source was $11,120,059.

CHINA AND ROADS

It will be gratifying to all who are interested in the development of China, and particularly to those whose business compels them to traverse the interior, to see that the Government is taking some notice of the efforts that have from time to time been made to have the great thoroughfares of the country improved. Centuries ago China had good roads, roads that



THE BUND AT KEELUNG

TAIWAN (FORMOSA) AND ITS EXPOSITION

On April 10, the Formosan Government will open an exposition to which it has invited the world and by which it proposes to show to the world the advances that have been made in Formosa since the Japanese took over the Island at the close of the Sino-Japanese war in 1895, this being ceded to her in lieu of Liaotung Peninsula, which spoil of war she was prevented from taking by the powers led by Russia, but later took it herself.

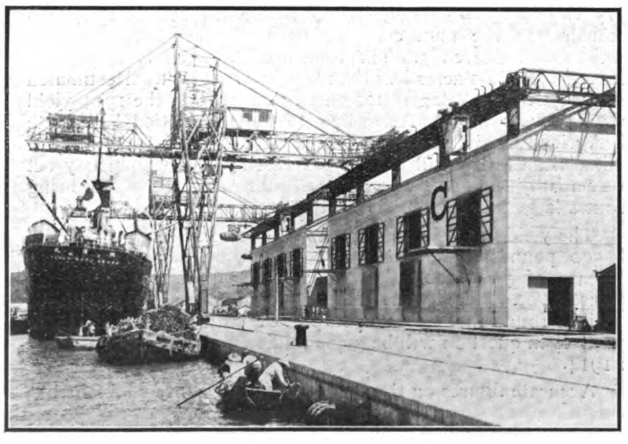
The reports of Formosa, or Taiwan as it is called by the Japanese, who have reverted to the ancient Chinese name, are issued for the most part in Japanese so that the outside world has had little opportunity to judge of the progress that has been made, and those who visit the exposition to view it with an understanding eye, will perceive at once the vast gulf that has been created between the Formosa of 1895 and the new Taiwan, —a hive of industry in which the slothful native has been compelled to mend his ways and conform to the Japanese idea of efficiency.

Taiwan's exposition will also be illuminating to those visitors from the United States, who have been of the opinion that even were the United States to withdraw from the Philippines, Japan would not care to occupy them since the Philippines have a warm climate and are unsuited to the Japanese, forgetting that the climate of Taiwan for the most part is identical with that of the Islands now enjoying the protection of the American flag, and which lie only a few degrees south of Taiwan.

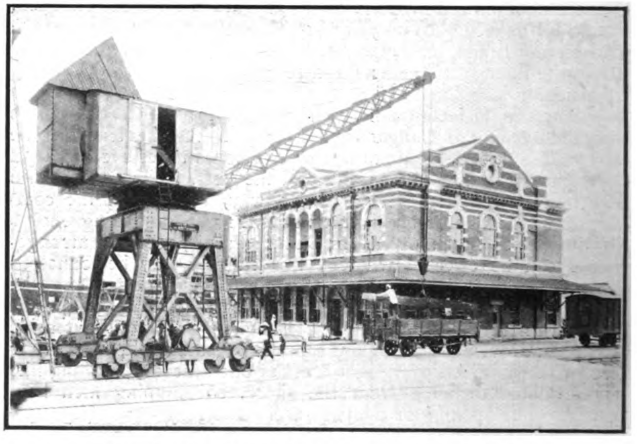
Japan has done her work thoroughly in Taiwan and has not been content to sit quietly as a collector of revenue at its ports, but at great expense both in money and men, has succeeded in bringing the Island to a productiveness that will seem marvellous when viewed by the Filipino or even by the American Administrators of the Philippines, some of whom we learn, will visit the Taiwan exposition. The following summary of the improvements inaugurated and carried through by the Japanese, therefore, should be read by Americans and Filipinos alike, with an eye to contrasts and comparisons, since the experience of the Japanese in Taiwan is similar in many respects to that of the Philippines.

As to the effect on the population of the relative systems of civilization and the methods of introducing them, the reader familiar with the work of the United States and the Philippines must draw his own conclusions, but the fact that upwards of five hundred Formosans have been executed for conspiracy within the past year, might well give the Filipino reason to pause and reflect as to whether he has been so harshly treated under American administration and whether he is really ready for the United States to withdraw, giving him a chance at independence, which might end in anarchy and subsequent Japanese occupation of the Islands.

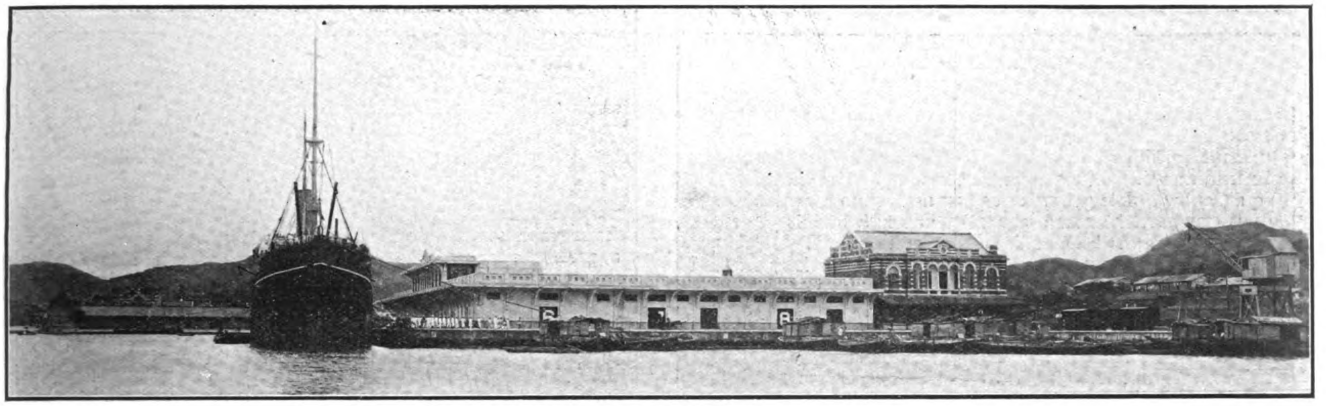
The purpose of this article, however, is not to call attention to possibilities, but to present actual facts and conditions as they are in Taiwan to-day after twenty years of Japanese occupation, and it must be said that the difficulties met by Japan in this island,



REMOVING CARGO AT THE TAKAO RIVER



TEN TON ELECTRIC CRANE LOADING RAILWAY CARS



THE FIRST MODEL WAREHOUSE BUILDING AT KEELUNG

the greater part of whose area is mountain and forest, have been much greater than those met by the Americans in the Philippines, barring the years of the Philippine Insurrection, since even to-day the Japanese are not in complete occupation of Taiwan, but are compelled to wage a systematic and increasing warfare against the wild tribes of the mountain heights. The following facts and figures regarding Taiwan and its people have been translated from Japanese reports regarding the progress of the Island:

Orography of Taiwan

Taiwan is the general name for the main island of Taiwan, the Hoko-to group (the Pescadores) and the adjacent islands. It is situated between 21° 45′ and 25° 38′ N. Latitude and between 120° 2′ and 122° 6′ E. Longitude. It has a circumference of 398 ri (1 ri = 2½ miles), and an area of 2,332 sq. ri, being nearly equal to the island of Kyushu. The main island is oblong, stretching from north to south, with mountain ranges extending throughout its length. These mountains constitute a watershed, sending short rivers to the east and the west. These rivers have rapid currents and wide beds, and as they are fed by numerous tributaries, they afford great facilities for irrigation. The soil is rich, bearing annually two crops of rice. Of the mountains several are over 10,000 ft. high, such, for instance, as Niitaka Yama, Gundai San, Sylvia San, Tandai San, Zensan, and Kwanzan. Among these the Niitaka is the highest, being 13,020 ft. above sea level. On the plains are found wide stretches of rich cultivated fields, while the mountains are covered with primeval forests, shielding natural resources of great value.

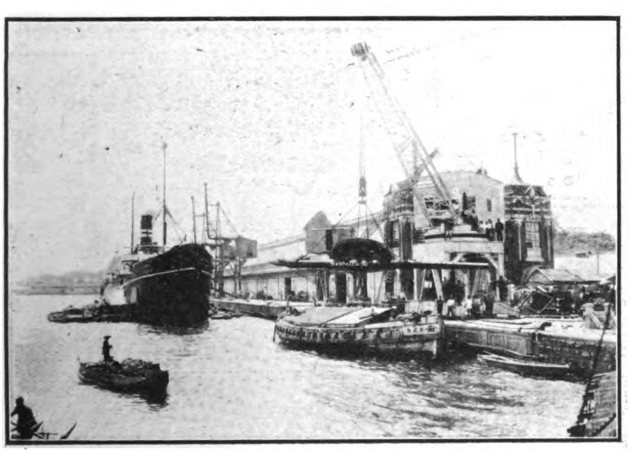
On January 1, 1914, the taxable lands amounted to 661,309 ko (Ko = 2½ acres), yielding taxes of 3,083,118 yen, non-taxable lands to 137,511 ko, uncultivated lands exempted from taxation to 92,161 ko, and newly reclaimed lands exempted from taxation to 7,484 ko.

Irrigation, Reservoirs and Canals

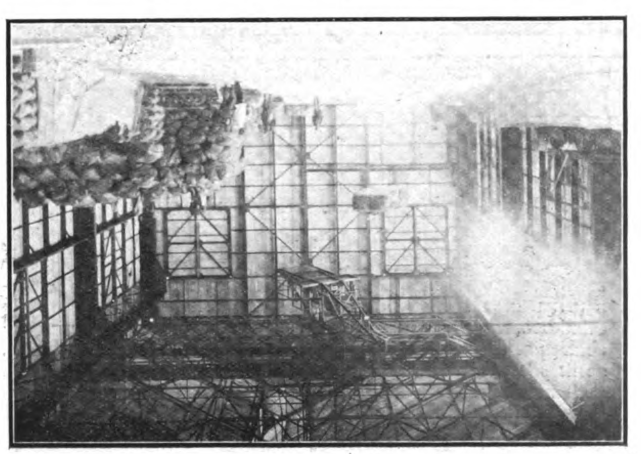
Taiwan possesses a highly developed system of irrigation, the oldest reservoirs and canals dating back two hundred years. Due to them the production of rice in Taiwan amounts annually to as much as four million koku of unhulled rice. The work of irrigation formerly was left to the private enterprise of individual farmers. To secure further extension and completion of the system the Government in 1901 assumed supervision over the management of irrigation works intimately connected with the interests of the public in general, and in 1914 there were 180 of them, irrigating a cultivated area of 239,082 ko from which the revenue is Y1,181,103. The Government in 1909 adopted a plan of government irrigation works, involving the disbursement of 20,000,000 yen spread over thirteen successive years, in which fourteen irrigation works are being constructed, to irrigate 118,000 ko of lands. The water power at the upper portion of the canals will be utilized for generating electricity to be conducted to important cities and towns of the island for lighting as well as for supplying power. Shishihto, Kori and three other places are included in the scheme whereby streams will be utilized for power besides serving the primary object of irrigation. When the scheme is fully completed it is expected that 10,750 H. P. of electricity will be generated.

Forests and Wild Lands

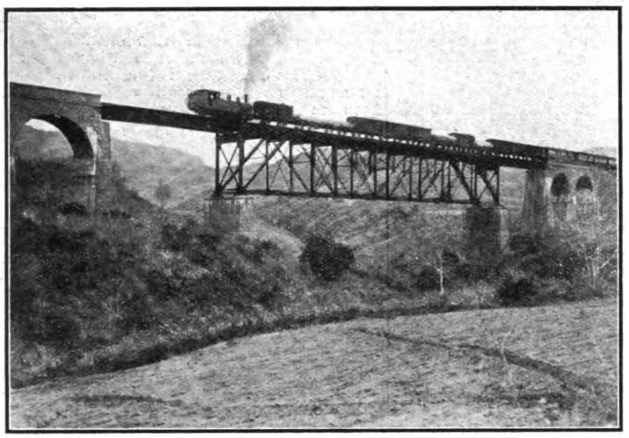
Taiwan is rich in forests, but no accurate statistics of the area covered by forests and wild lands on their borders are obtainable as yet, although a fairly reliable estimate puts the



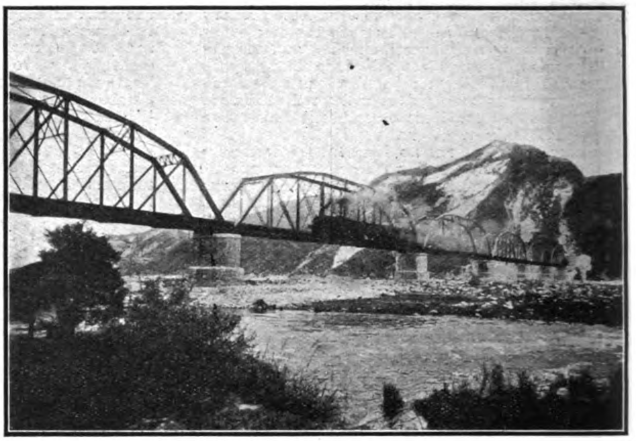
THIRTY TON ELECTRIC CRANE BEING TESTED TO FULL CAPACITY



GOVERNMENTAL PADDY GRANARY ON THE TAKAO RIVER



YUI SUNG PENG BRIDGE

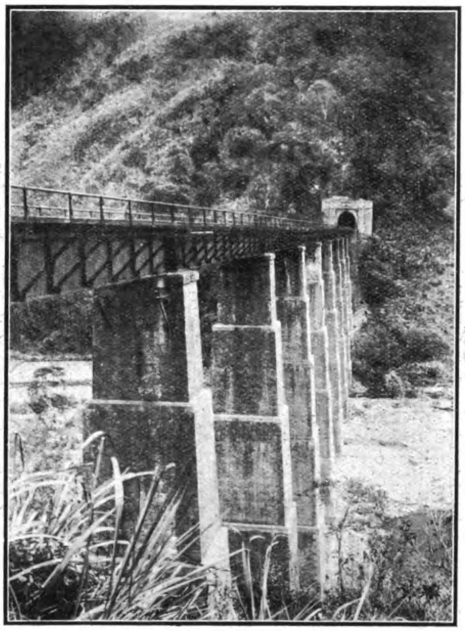


TA KAK CHI BRIDGE

figures at 2,000,000 ko covering forest, wild lands and river beds traversing them. The forests of Taiwan comprise vegetations belonging to tropical, sub-tropical, temperate and even to semi-arctic climates. The forests in the civilised parts of the island under Chinese rule had been to a large extent cleared of trees, partly for agricultural purposes and partly from indiscriminate felling for timber and fuel. Of late years, however, the work of reforestation has been encouraged. The utilization of forests in Taiwan is still in a state of infancy. In the past the only use made of private owned forests has been the customary cutting of trees for fuel and timber for repair work. As for the official exploitation of forests, the camphor industry is the only enterprise worth mentioning.

The lease and sale of forests and wild lands is carried out under the Regulations for the Provisional Sale of Forests and Wild Lands, the total area disposed of thus up to the close of 1915 amounting to 55,000 ko. The total area of forest and wild lands either sold or transferred from the beginning of Japanese rule up to the end of 1915 amounted to about 126,800 ko.

The famous Arisan forests, which are being exploited by the Government of Taiwan, are situated within the savage land limits, and comprise a total area of 11,000 ko, containing timber estimated at 18,300,000 shaku-jima (Shaku-jima=1 cubic foot). These forests are found at altitudes ranging between 2,800 ft. and 8,700 ft. above sea level, and are reached by a forestry railway of 41 miles. The exploitation of these forests originally started as a private undertaking, was transferred to the Government through purchase in 1910.



NA ZEU CHUEN BRIDGE

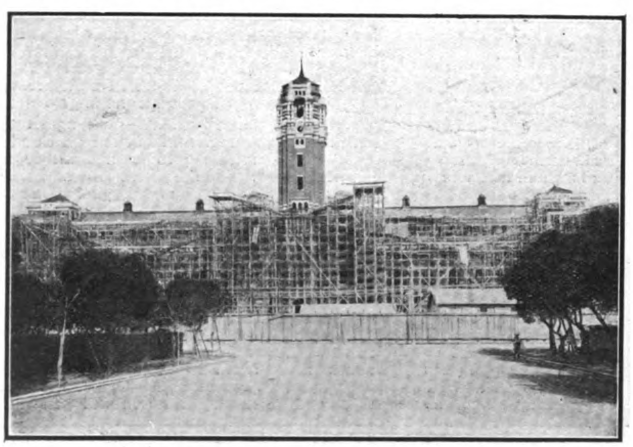
The forestry railway extends from Kagi Station to Nimanpei, Arisan. It is a mountain line, going up as high as 6,600 ft. above sea level, with a gauge of 2 ft. 6 in. and a greatest gradient of 1/20. The work of construction of the first section between Kagi and Jujiro, a distance of 34 miles, was commenced early in July, 1910.

Timber Felling

These primeval forests contain many old trees which should be felled as soon as possible, and the Government has adopted the plan of entirely renovating the Arisan forests in thirty-five years, by felling certain portions each year and reforesting them afterward. According to this plan the average felling each year will amount to 350,000 shaku-jima of timber.

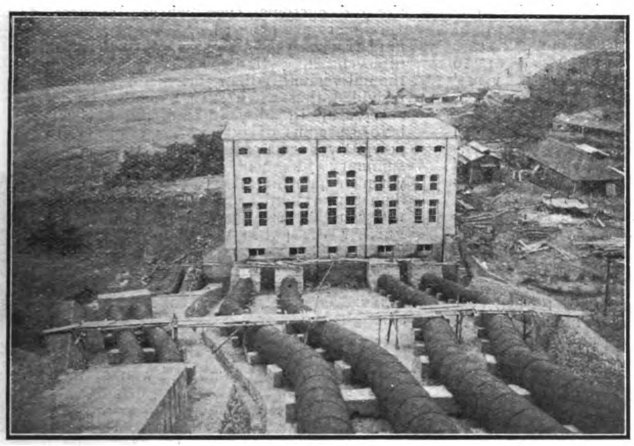
The timber is brought to a convenient spot on suspended cables. From Nimanpei, the terminus of Kagi-Nimanpei Forestry Railway, a railway is being extended at the rate of two miles a year, to accord with the progress of felling trees.

A saw mill has been built at the Kagi terminus of the forest railway using the latest improvements in machinery. In the choice of machinery and in arranging the mill yard, the object kept in view was the economy of labor in the handling of timber. This saw mill, running at full capacity, turns out annually 200,000 shaku-jima of prepared lumber. The

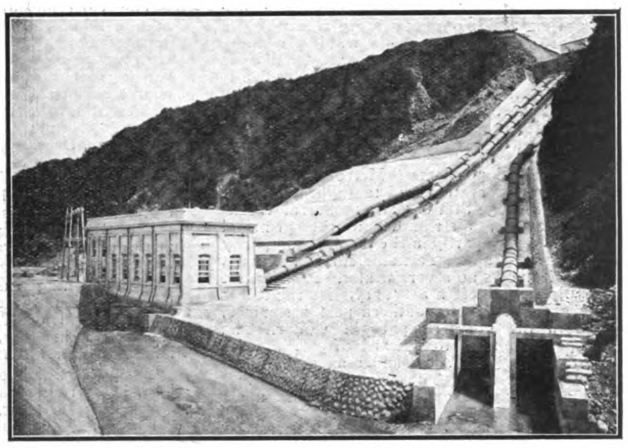


THE NEW COURT OF THE GOVERNOR GENERAL

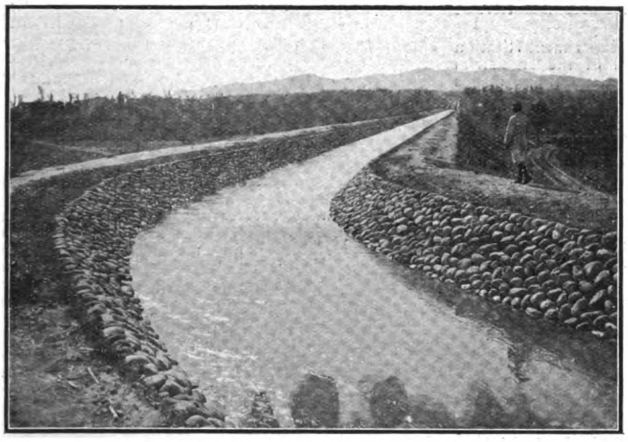
THE TAIHOKO TEMPLE



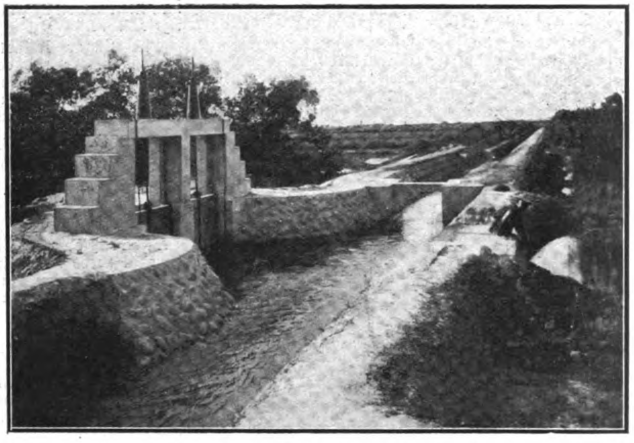
Electric Light Works under construction at Loh Kwe Li



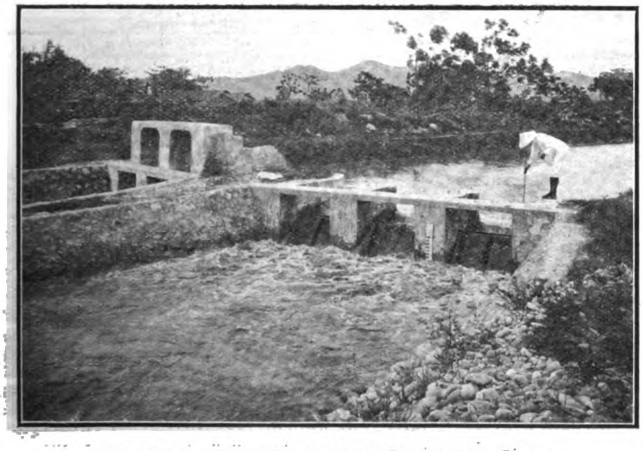
Electric Light Works at Ieu Li Zen



Roadway Along Irrigation Canal



The Ieu Li Zen Dam and Sluice



The Sze Taz Den (Lion's Head) Dam and its Sluice

The Taihoku Water-Works

buildings of steel-concrete frame are fire proof and the two big saws are able to cut a timber of 6 ft. diameter; the whole machinery being run by electric power. Timber is brought to the mill on suspended cables, while inside it is moved about by an automatic apparatus. Sawdust and clapboards are used as fuel for producing electricity.

Climate of Taiwan

The island possesses 6 Meteorological Stations, 1 Observatory and 10 Light-houses, 71 Rainfall Gauge Stations and 18 Storm Warning Stations, distributed in the principal centres. Lying partly in the tropics and partly in the sub-tropics, Taiwan's summer is long, while it knows no severe winter. It is hottest in July and coldest in February. Its rainfall is the greatest in the southern part in summer, and in the northern part in winter. The temperature rises to upward of 90°, in some years as early as April and remains there as late as October. The winter is mild and seldom brings frost, while it never snows except on the highest mountains.

Education of Formosans

The first attempt at introducing modern education was made in May, 1895, when the Educational Office was opened in the newly established Government of Taiwan. But Taiwan was at the time not yet wholly pacified, and in the midst of military activities no permanent school could be established. The members of the Educational Office, however, gathered together a few native children and taught them the Japanese language. It was an experiment, but repaid the labor by giving the teachers much needed experience. In September a class of 21 native Formosans was formed and proved a success. But on New Year's day an insurrection broke out, the city of Taihoku was surrounded by insurgents, and in the affray some of the teachers were killed.

In May, 1896, the National Language School was established at Taihoku, and similar but simpler schools were opened in important towns. In July, 1898, Elementary Schools like those in Japan proper were established for the benefit of Japanese children. In April, 1899, normal schools were established for training native teachers, but were abolished later, it being regarded more convenient to have native teachers attend the National Language School. In May, 1907, a Middle School was established at Taihoku, and as its annex a High School for Girls (these replacing the boys' and girls' middle grade departments at the Japanese Language School).

Besides these attempts at education of a general nature, industrial and other special schools have been established. At Taihoku there was established in 1898 a School for Training Policemen and Prison Officers, in 1899 a Medical School, in 1900 an agricultural course at the Agricultural Experiment Station, in 1908 a Sugar Industry Course, and in the same year a Forestry Course.

In view of the increasing demand for skilled machinists and mechanics owing to the rapid growth of industry, the Government finally established a Technological Institute, completed in 1913 at an expense of 150,000 yen.

"Ko-gakko"—Public Schools are primary schools for native children and are established under the control of prefectural authorities. The aim of these schools is to teach the Japanese language and give all the ordinary moral and mental training necessary for fitting the children as loyal members of the Japanese nation. The course is usually of six years. Attendance is not compulsory, and the establishment of these schools is left to the initiative of local communities.

The Primary Schools for aborigines also are under the control of prefectural authorities. The teaching is regulated to fit the special conditions of the tribe in which it is established. The course of four years contains Morals, the Japanese Language and Arithmetic, sometimes Agriculture, Manual Training or Singing being taught in addition.

The Government General maintains one middle school at Taihoku, for the benefit of Japanese boys. The course lasts for six years with an additional course of two years to which graduates are admitted. The six years' course comprises National Morals, Japanese, Chinese, English, History, Geography, Mathematics, Natural History, Physics and Chemistry, Drawing, Singing, Practical Training and Gymnastics. In the higher two years' course are found English, Law, Economics and an additional foreign language. A distinctive feature is dormitory life, which is expected to inspire the boys with ideals of noble personality through training in etiquette and social life.

The Training Institute for Policemen is under the immediate control of the Government General of Taiwan. The school was established in July, 1898, and sends forth annually several hundred graduates.

The Medical School was established in 1899 by the Government General for native doctors and public surgeons. The Agricultural Experiment Station is under direct control of the Government General, and carries on experiments and researches for the improvement of agriculture; trains pupils in agriculture, forestry and veterinary practice; distributes seedlings, silkworm eggs, new breeds of domestic animals, and fowls; analyzes the composition of soil, fertilizers, agricultural products, etc.; and in general gives guidance and instruction by public lectures in matters of agriculture.

The Sugar Industry Experiment Station also is under the control of the Industrial Bureau of the Government General and makes experiments and researches in all matters concerning the sugar industry, at the same time giving a course which was opened first in 1905.

There are eight daily papers and thirty-one periodicals issued in Taiwan, their number constantly increasing.

Religious Institutions

The religious conditions of the Island must be said to be somewhat chaotic; the religions introduced from outside, Roman Catholic and Protestant Christianity as well as Shintoism and Japanese Buddhism, being found side by side with the religions originally existing, Confucianism, Taoism and Buddhism. Christian Missionary activities began long before Taiwan passed into Japanese possession, the Roman Catholic mission being in the hands of Spanish priests and the Protestant under the missionaries of the Presbyterian Church of Great Britain. These missions are engaged also in the work of education and charity, and in education, etc., meet with considerable success. Shintoism, Japanese Buddhism and Christianity are being propagated with much zeal but as yet with little success. The cult of the natives seems to consist in worshipping a curious mixture of deities. There is no question that the natives show much zeal in attendance at their temples. In 1915 there were 9 Shinto, 60 Buddhist and 192 Christian churches or preaching halls.

Judiciary System

When Taiwan passed into Japanese possession in May, 1895, law courts were established in accordance with the provisional regulations of the Governor-General in Council, issued under a military administration. These courts consisted of one Central Court with branches. When the military administration was abolished, civil administration was introduced by establishing Local Courts, Courts of Appeal and the Supreme Court. In 1898 the Supreme Court was abolished, making the trial at the Appeal Court final.

In all civil cases, the Japanese Civil and Commercial Codes are applied where Japanese or foreigners (Europeans) are litigants while the judgments in cases in which the natives of Taiwan or Chinese are concerned, are based on the old customs of the Island. The natives and Chinese, however, come under the operation of the Criminal Code. In actions concerning real estate the judgment is based on the old customs, even where Japanese or foreigners are concerned. In 1904, local administrative officials were given power to intervene in civil disputes occurring among the natives under their jurisdiction, and it was provided that when such a mediation prove successful, the dispute shall not be brought before a court of justice. In criminal cases, power was conferred on the police to pass summary judgment or immediate decision when the punishment involved was no heavier than three months imprisonment or a fine of 100 yen thus saving both time and expense. Further the police were empowered, when deemed advisable, to substitute a fine for an imprisonment of three months or less, and flogging for a fine of 100 yen or less. These innovations meet special conditions existing among the natives.

Distribution of Police

The first introduction in Taiwan of modern police system dates back to August, 1895, when 70 police sergeants and 700 policemen were landed at Taihoku and sent to places of importance in the interior. In April, 1896, a police force similar to that in Japan was organized and increased to 230 police sergeants and 1,387 policemen. The police force thus greatly strengthened in number was found still inadequate to preserve peace; and in order to give better protection to peaceful inhabitants what was called a three-fold policing system was adopted in 1898.

Under this system the subjugation of insurgents hiding in the mountains was entrusted to the army, the policing of settled villages to the ordinary police, and the lands between these two guard lines were placed under the joint care of the gendarmerie, and police. For some years natives have been employed as assistants to the police with markedly good results. It is largely due to this perfected system of police administration that operations against insurgent uprisings have been so successfully carried out. The police also have the work of keeping track of the households and movements of the people.

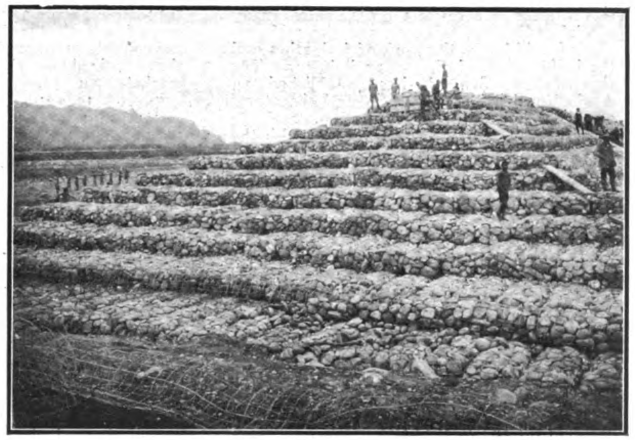
Aborigine Affairs

In 1896 all affairs connected with aborigines and aboriginal regions were placed in charge of the Industry Department of the Civil Administration Board; and there were established 11 stations for the domestication of the aborigines. After various changes the Aborigine Affairs Regulations were issued establishing Districts presided over by a Police Inspector.

The aborigines, divided into many tribes, occupy more than one half of the area of Taiwan, their total population being estimated at about 120,000. There are nine main groups of tribes:—the Taiyals, the Saisset, the Bunnun, the Tsuou, the Tearisen, the Paiwan Piyuma, the Ami and the Yami. Among the various tribes, the most warlike and ferocious are the Taiyals. The main strength in advancing the "aiyu" or "guard line" is directed against this tribe. The Bunnuns and the Paiwans are also daring savages; but they may be regarded as tractable in comparison with the Taiyals. Living in plains, the Amis have more chance to come in contact with civilization, and are gradually becoming accustomed to agricultural life. The Yamis, who live in solitary islands, are the most backward.

The work of domesticating the aborigines is carried on by teaching them industry, by giving them education and free medical treatment. The aborigines are not entirely unacquainted with the tilling of soil. Their usual method consists in burning forests or plains, and sowing or planting the upland with rice, millet, potatoes, beans, etc., after slightly scratching the soil (some of them sow seeds without tilling). They do not really cultivate; nor do they ever fertilize lands. After two or three years when the productive power of land gives out they turn to new places to repeat the process. The Government has opened, in several prefectures, model farms for teaching

MAKING IRON WIRE DIKE FORMS



THE IRON WIRE DIKE SYSTEM IN PLACE

simple farming methods, such as hoeing, weeding, etc.

The art of weaving is not unknown among the aboriginal women. Though rude in construction they have looms on which they weave cloth for household use or for barter. Five training institutes to teach them an improved method of weaving have been opened.

At the children's training institute in Toyen Prefecture an instructor skilled in the use of the lathe is employed to teach the aboriginal boys the making of wooden trays, bowls, etc. They have readily taken to this handicraft. At a similar institute in Kagi Prefecture rattan working is being taught the aboriginal boys and young men.

Between 1896 and 1901 attempts were made to give the rudiments of education to the aboriginal children, but with little or no result. Only after the latter year, when the education of aborigines was placed in charge of the Prefectural Governments has the work been carried on under a uniform plan with something to show. In 1905 ten public schools for the aboriginal children were established in the Prefectures of Taito and Koshun; the number being later increased to sixteen. But these efforts are confined to the more domesticated of the tribes. To disseminate education more widely among the aboriginal tribes in general and to introduce Japanese manners and customs among their children, and through them to extend civilizing influences to their parents and elders, the island authorities have since entrusted the police with the work of reaching and teaching young aborigines, wherever possible.

The aborigines have their own code of morals handed down from ancient times. They have strict rules regulating relations between the parent and child, between brothers, between husband and wife, and between the old and the young, well in keeping with the ethical principles of piety, devotion, fidelity and reverence. They are, also, ancestor worshippers, and are very loyal in observing traditional teachings. Even their custom of head-hunting has a patriotic meaning with them, in that it originates in the pious desire to defend the land bequeathed by their ancestors against the encroachment of alien people. Being thus based on such a motive, it is no easy task to persuade them to give it up. In view of this the Government's plan is to convince the tribes of the futility of resistance by the pushing forward the Aiyu lines and by sending out punitive expeditions, and then to induce them voluntarily to surrender their fire arms. Then effort is made to convert them morally and spiritually by stationing religious teachers of firm resolution and unshakable faith among them. The wives of some of these teachers have been entrusted with the work of reaching and winning over the aboriginal women.

Subjugating the Tribes

Two methods are used in subjugating the defiant tribes. One is the pushing forward the Aiyu or guards lines and the other the punitive expedition. The Aiyu is a line of outposts surrounding ferocious tribes. Along the intended line a road is cut across mountains and valleys, and the inside of the line is cleared for some distance of trees and shrubs, in order to facilitate shooting. On this road, outposts consisting of 2 to 4 aiyu-men (native guardsmen) are stationed every two or three cho. At every two or three outposts is stationed the superintending agency consisting of a Japanese policeman and several aiyus, while the whole line is placed under the control of a police sergeant and his subordinates. At strategic points machine guns are placed and wire entanglements are set up, thus making it impossible for the savages to cross the boundary and attack peaceful inhabitants. The advancing or pushing forward of the line means the gradual shifting and closing of this line on the tribal headquarters, steadily circumscribing them within narrower limits.

Punitive expeditions are formed and put in operation when the refractory aborigines offer organized resistance in defiance of peace time police force, the object being to punish and bring them into submission. These expeditions are conducted by bodies of policemen sometimes assisted by the regular troops. The guard lines have been advanced or new lines set up forty times, and ten or more punitive expeditions have been conducted.

Agricultural Productions and Settlers

The soil and climate of the Island are well fitted for agriculture. To add to this, the

ON THE GREAT OAK RIVER

THE TAIHOKU HOSPITAL

Government General has promulgated many special ordinances to encourage the reclamation of wild lands, the work of irrigation and the building up of the sugar industry. The Government General has established an Agricultural Laboratory, a Sugar Laboratory, an Experimental Tea Plantation, and an Experimental Horticultural Station, with the object of disseminating an agricultural education by carrying out experiments, and also by enlisting students. More recently the Government General issued regulations for the encouragement of sericulture, which has a great future in the Island. Since these measures of agricultural administration have been in operation there has been conspicuous activity in all agricultural industries and considerable increase in production.

The total area of land for which permit to open up was issued up to the end of December, 1914 in accordance with the above regulations was 54,773 ko, of which 4,276 ko have been conferred the industrial rights. The area provided with newly cut irrigation canals stood at the end of 1914 at 158,670 ko officially recognized and 72,874 ko not officially recognized; total 231,679 ko.

The agricultural work of the Island is carried out on lands long since under cultivation as well as those newly opened up. The utilization and economy of land coming under the former category have been intensified and they have shown marked advance in their productive capacity, so that their total outputs were valued at over 100,000,000 yen at the end of 1914.

Occupied lands are about 10 per cent of the total land area of the Island and something over 54 per cent of the "administration zone." Of those cultivating these areas, 358,072 are independent farmers, 242,206 part independent and part tenant farmers, and 272,390 tenant farmers, or a total of about 1,000,000, that is, about 30 per cent of the entire population of the island. Add to this number 1,014,287, persons employed as farm hands, and it is seen that about two-thirds of the whole population belong to the farming class.

Principal Agricultural Productions

The production of rice has greatly increased of late, the area of land cultivated for the purpose reaching 492,944 ko in 1914, yielding 4,489,000 koku of rice, valued at 51,676,000 yen. Rice, thus, comes second only to sugar in the list of the Island's agricultural products and forms 40 per cent of their entire value. The Island's transactions in rice with Japan were opened in 1897. In 1898 the price of rice rose high in Japan and the exportation of the cereal from the Island made a sudden increase. Since then its shipment home has gone on steadily so that to-day the entire surplus after supplying the needs of the Island is forwarded to Japan, and in 1914 its export amounted to 680,000 koku valued at 7,900,000 yen. The rice of two crops in one year (1913) was 2,346,998 bushels. (Koku=5 bushels).

The peanut or ground nut, is raised all over the Island, especially in the sandy soil on the river-side and sea-shores, where it is cultivated as an after crop to the sugar cane or sweet potato. Besides yielding an oil, its leaves and stalks go to feed horses and cattle. Its area is 19,414 ko.

Though found more or less in every part of the Island, sesame is most largely cultivated in Kagi, where it is chiefly used for the expression of oil. It is grown on 10,953 ko.

The island in 1913 exported 17,000,000 kin (Kin = 1⅓ pounds) of tea, worth Y 6,434,680, and the plant forms one of the main-stays of its trade. The shrub grows luxuriantly in the northern provinces of the Island, the Toyen district being most noted while Daitotei is the chief market.

The tea zone of the Island is hilly and undulating with high plains. Both soil and climate are well suited for the growth of the shrub. There is not a hill side or an elevation that has not been turned into a tea plantation. The area of tea plantations in 1914 aggregated 33,383 ko yielding Y7,000,000 of manufactured leaves. The tea leaves are roughly prepared by the local farmers and then re-fired by the tea-merchants in the market town.

Sugar plantations were formerly found mainly south of Dakusuikei, where the lack of irrigation facilities made it impossible to raise rice. The native sugar industry of Formosa possesses a history dating back hundreds of years, but has always been primitive, the variety of canes being of inferior kind while the method of cultivation has been carelessness itself with no attention paid to the problems of fertilization and irrigation, and consequently the crop amounted to only 40,000 kin per ko (21,200 lbs. an acre) with five to eight per cent of sugar.

When the Government General undertook to introduce improvements in the industry in 1903, it, therefore, began the work by endeavoring to persuade the planters to reform, at the same time extending aids in furnishing fertilizers and young plants, while insisting on advanced methods of cultivation. As the result of improvements in the method of cultivation the crop per ko has increased to 50,000 kin or more with 10 per cent or more of sugar. Besides the plantation area has also greatly increased, and in 1914 the sugar crop was seven times that of 1903.

Other crops are indigo, "tree indigo," ramie, jute, pine apple fibres, China grass, tobacco and fruits, among them oranges, lichees, persimmons, plums, peaches, bananas, and pine-apples.

The number of settlers received up to the end of 1913 was 73,937 persons, of whom 18,671 were men and 55,766 women. Their health condition is good.

MYSORE SANTALWOOD DISTILLERY

The establishment of a factory in Mysore state, India, for the manufacture of sandalwood oil marks another step forward in the gradual elimination of raw materials from exportation and their replacement by the finished or at least partly manufactured products. Not that sandalwood (properly santalwood) oil has not been a manufacture of India, but the product turned out by the small and badly equipped native plants has been so crude and has suffered so many adulterations in its progress to the final markets that these were finally shut to it and the native buyer was left alone in his handling and use of it. The distillation of the wood by private persons is prohibited in Mysore state, anyway, and the few tons of the wood that passed through the rude native stills, was the product of the border areas of the forests.

Manufacture of essential oils is a highly technical process which has been a gradual development in Germany and France, which countries were the ultimate buyers of the santalwood, and as knowledge of these methods had not penetrated to Mysore, as a preliminary to any proposals to set up sandalwood distillation in Mysore, it was decided to have the whole question thoroughly investigated and this work was entrusted to Professor Sudborough and Dr. Watson of the Indian Institute of Science. During the whole of last year and up to the present time the matter has been under experimental investigation and the results obtained are of a sufficiently satisfactory character to warrant the establishment of an experimental factory where the oil will be manufactured on a commercial scale.

This new factory which will cost about one lakh (R. 100,000=$32,400 gold) of rupees is under construction. In the course of the experimental work, a considerable quantity of sandalwood oil has been produced, the bulk of which has been sold locally at very favourable prices and the oil which has been sent to England has been declared equal to the best that can be obtained in Europe and has fetched equal prices. It is hoped that by the end of this month (March) the new factory will be at work, producing about 2,000 pounds of sandalwood oil per month. The oil produced with the experimental plant is now selling freely at Rs. 18 per pound whilst the price on the London market is as high as 30 shillings a pound. To pass the test to which the oil is subjected in Europe, complete chemical control is necessary and every consignment of oil sent out from the factory will be subjected to an examination, and a certificate as to its quality issued. In this way it is hoped to be able to overcome the prejudice against the sandalwood oil manufactured in India and to retain in the Mysore State the profits on the manufacture of the oil which have hitherto largely gone to Germany.

Although sandalwood oil has been manufactured in India from time immemorial, this venture is practically a new industry as the methods intended to be pursued are from the beginning entirely different from current Indian practices. The annual auction sales of sandalwood will still continue and the new factory will purchase sandalwood from the Forest Department at the same prices as paid by outsiders. If the industry proves profitable, it is under contemplation to establish a distillation plant of sufficient size to deal with the whole annual output of the sandalwood of the south of India. The advantages possessed by a local distillery worked on modern lines are very considerable, and it is expected that not only will the State be able to maintain the revenue hitherto enjoyed from the sandalwood monopoly but largely to increase it. The disposal of sandalwood in Mysore, we are reminded, is a State monopoly which in recent years has produced a large net revenue. In 1913-14 just previous to the outbreak of war this revenue amounted to 19.87 lakhs of rupees produced by the sale of 1,862 tons of wood. The wood is mainly disposed of by auction sales held in the months of November and December, but after the outbreak of war there was an almost complete cessation of the demand from European buyers. Latterly the business has revived and at the auction sales at the end of last year good prices were obtained for a fairly large quantity of wood.

UNLOADING OIL TANK CARS

At oil tank stations where two or more different kinds of oils are stored, pumping plants are being used for transferring oil from the tank cars to the storage tanks.

The outfit which is made by The Goulds Manufacturing Company, Seneca Falls, N. Y., and is known as their Fig. 1668, consists of 2 Goulds 6"x6" "Pyramid" Single Cylinder, Single Acting Piston Pumps mounted on one base with pulley between. The shafts of both pumps are fitted with jaw clutches so that the pumps may be operated separately or both at the same time.

As it is not convenient to always clean the pumps this is an ideal outfit for such service as the same pump can always be used for handling the same oil.

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

The Canton-Hankow Railway.—Construction work on the Canton-Hankow railway has continued despite the war, though the great conflict will cause a suspension of activity before long owing to the exhaustion of finances. It will be impossible to push on to completion the section from Wuchang to the border of Kwangtung province, where it is to join with the section being constructed from Canton northwards, but connexion will at all events be made between Wuchang and Changsha, the capital of Hunan Province, a distance of some 225 miles. This link is expected to be forged by the end of this year at latest, with the exception of a few bridges where ferries will have to be used. Bridging is going to prove difficult even under most favourable conditions of finance and purchase of materials, the rise of water from navigable low water to flood height being some forty feet, and thus necessitating extremely high structures.

Already thirty-five miles of rails have been laid south from Wuchang (or Hsu-chia-pang, where the workshops are on the Yangtsze, five miles from Wuchang) and construction trains will shortly operate until a regular service can be introduced. By the end of March it is expected that 52 miles of line will be completed.

Peking-Jehol Railway.—As the Peking-Jehol line is important strategically to link up railway communication between the interior of China and Mongolia the Government according to Chinese press reports, has despatched engineers to make a complete survey of the line, whose estimated cost is approximately $12,000,000. The programme of construction is as follows:—The work to start not later than in June, 1916; the whole line to be completed in three years. The line is to be divided into three sections—(1) from Peking via Shunyi to Miyun, (2) from Miyun to Kupeikou, (3) from Kupeikou via Luanping to Jehol. The construction cost is to be defrayed from the surplus funds of the Peking-Mukden and the Peking-Hankow railways, in three yearly instalments, viz: $4,000,000 for the first, $3,000,000 for the second, and $5,000,000 for the third year.

Mr. Chang Pei-chun, of the Communications Ministry, Peking, accompanied by Mr. Yingjui, of the Board for Mongolian and Thibetan Affairs, and a number of railway engineers, visited Mukden early in March. After consulting with the Mukden Government authorities, they started northward to survey the proposed route via Jehol and Chihfeng.

Hangchow-Hweichow Project.—Efforts are again being made to revive the project to build the extension from Hangchow to Kuangteh and Hweichow in Anhui Province which has already been surveyed. The Chekiang and Anhui promoters of the line, according to the *North-China Daily News*, have appointed a representative to talk the matter over with the Shanghai-Hangchow-Nanking Railway officials. When this railway is built, it will bring Mokanshan summer resort within a few hours of Shanghai and may pass near enough to the Shanghai Municipal Pingchiao quarry to transport the stone to Hangchow and Shanghai. Attempts will be made to induce the Government to hasten the building of this line.

Chefoo-Weihsien Railway.—Telegraphic advices from Tsinan say that arrangements have been made for raising the capital required for the construction of a railway between Chefoo and Weihsien and that work will be started in May, according to an announcement made by the Chinese. The cost of the line has been estimated at $10,000,000. Recently, the ministry has advised the Chefoo chamber of commerce that of the estimated cost, $1,000,000 shall be borne by the general chamber of commerce in Chefoo, $1,000,000 by the proposed railway, $2,000,000 by the province of Shantung, $2,800,000 by other provinces, totalling $6,000,000. The remainder of $3,200,000 will be financed by the ministry of communications.

New Amur Railway Facilities.—The Transbaikal railway authorities announce the running of one through train over the new Amur Railway through Blagovestchensk direct to Haborovsk from May 1. Passengers will be able to reach Vladivostok from towns in Russia without having to pass through Manchuria. The putting together of the new 30-ton American freight cars is progressing satisfactorily in Vladivostok so that the car famine soon will be over.

Kaifeng-Honan Line.—Railway construction westward is proceeding apace. Old bridges are replaced. In a short time trains will run both day and night between Hsuchow and Kuanint'ang west of Mienchi. This is a 35 stage run. Beyond Kuanint'ang are the long tunnels, and it will be two years before trains can go further. At present travellers stop at Kaifeng over night, but in a short time the train will go through direct. The limited supply of rolling stock now available is taxed to its utmost. The trains are so packed that often sitting room is out of the question, even the platforms between the carriages being thronged. The train passes by intermediate stations as there is no further room for the accommodation of travellers.

Broad Gauge in Japan.—A Japanese news agency states that the sum necessary to rebuild the railway as a broad gauge between Tokio and Shimonoseki is Yen 254,000,000 while the estimate for the repairs of the line is Yen 238,000,000. Therefore the Imperial Board of Railways of Japan has decided to effect the rebuilding of the line as a broad gauge railway and is waiting only the sanction of the government.

Yokohama Elevated Progresses.—Construction work on the elevated line of the government railway between Yokohama and Sakuragi-cho stations, which was started immediately after the new year, has been making rapid progress. The concrete foundation work for three bridges is nearly completed. The old Yokohama station will be reconstructed for the new line.

S. M. R. Traffic Returns.—The South Manchuria Railway Traffic Returns for February totalled Y1,915,304.89, a daily average of Y66,045, being a decrease of Y635,002.62 for the whole month and Y25,037.41 per day, as compared with February 1915. The total Traffic Receipts of the fiscal year to February 29th amounted to Y22,248,345.27, and the net increase over the corresponding term of the preceding fiscal year increased to Y532,409.07.

Federated Malay States Railways.—The extension of the Federated Malay States railway system towards Bangkok, has resulted in the opening of traffic from Prai to Alor Star a distance of 56 miles 18 chains. The position of the rail head now is the 84th mile and the earthwork is completed up to the 90th mile. A further extension of the railway it is expected will be open to traffic in January 1917 to Aro Station at the 80th mile. It is estimated that the F. M. S, section of the Bangkok extension will be completed about the middle of 1917, the distance to boundary station of Siam being 98 miles. The staking out of the Siamese section, Ootapao to Perlis boundary, was completed some months ago in continuation of the F.M.S. section, Alor Star to Perlis-Siamese boundary, and it is understood good progress has been made with the construction throughout. The junction station on the boundary is at Padang Besar, and it is anticipated that through communication between Prai and Bangkok will be established for passenger and goods traffic some time in the latter half of 1917. The passenger and goods traffic to and from Prai and Alor Star has come up to the Railway authorities' anticipations for the period during which the line has been open and the train service will have to be increased as soon as additional locomotives and carriages are obtainable from home. The new line is paying remarkably well, not only 3rd class carriages being fully taken advantage of, but the 1st class also often are full.

It has been decided that the extensions at Prai should be left to the F.M.S. Railways, as the government was unable to finance them sufficiently to make Prai a successful port. The remodelling of Prai passenger station is well in hand, and the doubling of the line from Bukit Mertajam to Prai completed. Plans for remodelling the goods yard and extending the wharfage accommodation have been submitted to the Consulting Engineers in London, and their report is now under consideration. It is hoped to provide wharfage for ocean-going traffic as the future of Penang is largely bound up in the proper development of Prai and the neighbouring foreshore, which should eventually become to Penang in a smaller way what Kowloon has become to Hongkong. Prai cannot help becoming an important centre of trade as the Peninsula develops, and the more facilities provided for the economical handling of a large trade the greater the gain of the port will be.

Philippine Railroad Project.—The Philippine Legislature has conferred a franchise for the construction of a railroad in the island of Negros, to do a general transportation business, but more particularly to improve the facilities for handling the sugar output of this the most important cane-growing district in the islands; and incorporation papers have now been taken out for a company to undertake the construction of the road. The incorporators are all Filipinos, the first project of the kind in which this has been the case.

The name of the company is the "Ferrocarril Agricola Pulupangdan-Isabela;" that is, the Pulupangdan & Isabela Agricultural Railway Co. The line is to run between these two places, the former of which is on the seacoast and is a somewhat important point for shipping sugar to Iloilo, while the latter is the center of one of the richest sugar-producing

THE FAR EASTERN REVIEW

COMMERCE :-: ENGINEERING :-: FINANCE

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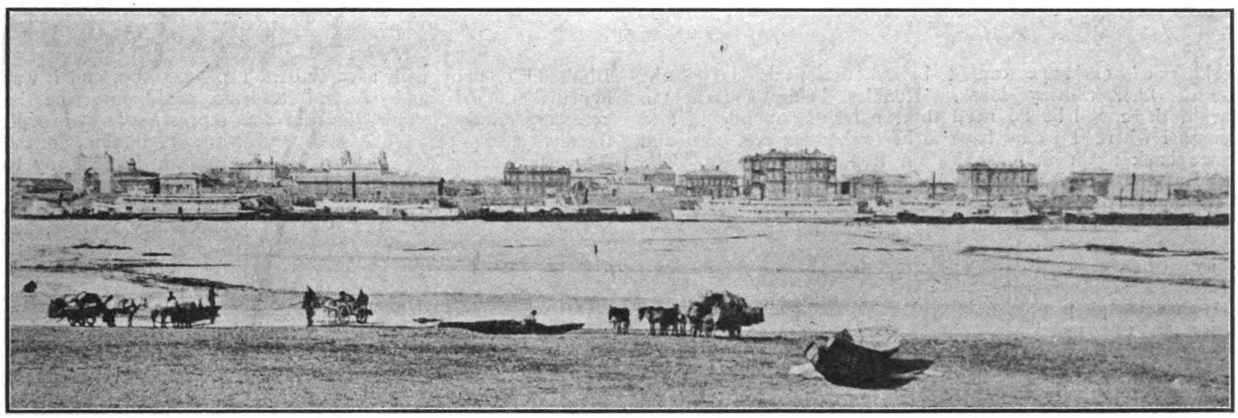


BLAGOVESHCHENSK ON THE AMUR SEEN FROM PROPOSED NORTHERN TERMINAL OF NEW RUSSIAN RAILWAY

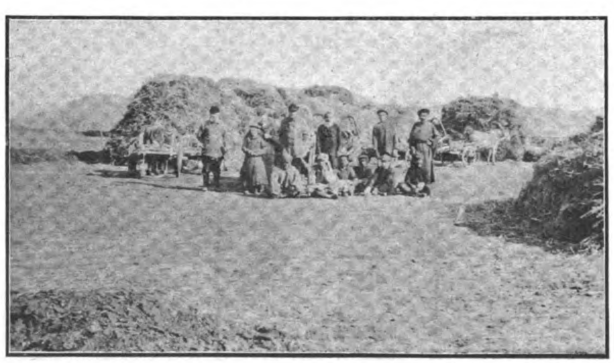
NEW RAILWAYS IN NORTH MANCHURIA

Russia Consolidates Her Position

An important agreement was signed in Peking on March 27 last between the Russo-Asiatic Bank, represented by Mr. L. de Hoyer, and the Chinese Government, represented by Mr. Liang Tung-yen, the Minister of Communications, and Mr. Chou Hsu-shih, Minister of Finance, for the construction of a railway connecting the cities of Harbin, Mergen, Aigun, and Tsitsihar, in Northern Manchuria.

As is well known Harbin is an important city at the junction of the Siberian Railway and the line running south to Changchun and thence to Dalny, while Tsitsihar is connected with the Siberian Railway by a light line which will be taken over under the agreement just signed. Mergen is a little more than half way between Tsitsihar and Aigun, which is on the Amur River. North of Aigun, on the opposite side of the Amur, is the city of Blagoveshchensk, which the new railway is destined to serve. Connection will be made by means of ferry boats with what is now the village of Heiheifu, opposite Blagoveshchensk, where the railway will terminate.

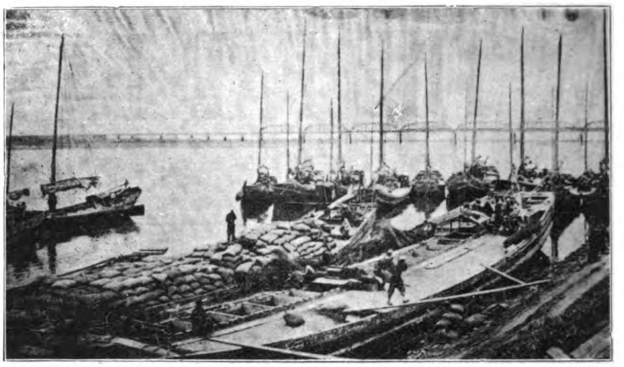
The total length of the proposed railway is approximately 1,000 kilometres. It will link up the Siberian railway with the Amur River, and will consolidate Russian interests, and incidentally develop great areas of valuable territory, in North Manchuria. An interesting point is that it will cover the northern section of what is known as the Chinchow-Aigun project, the agreement for which is held by the American Group of Bankers, but which was rendered void by the energetic protests of Japan that the proposed line would parallel the South Manchuria Railway.



RUSSIAN FARM IN NORTH MANCHURIA

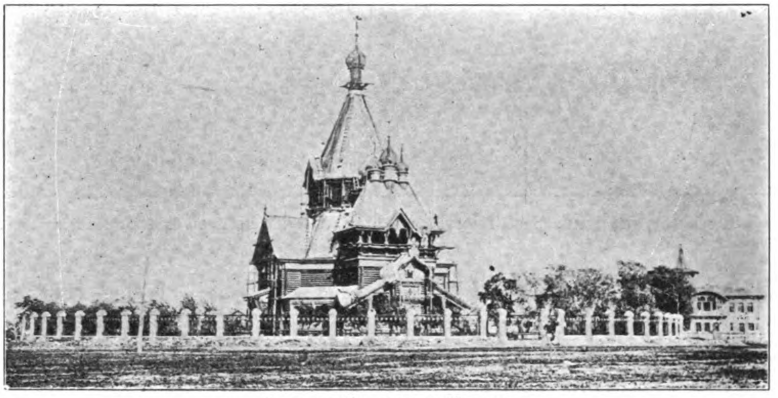
The agreement is for a loan of fifty million Roubles, and any additional amount which might be required to complete the project, the loan to be floated when financial conditions may permit after the war, and in whatever markets the Russo-Asiatic Bank may deem money to be available. The agreement is regarded as an improvement on other railway agreements in China where the interests of the financiers are concerned with control of expenditure, etc., while the Chinese Government gains a distinct pecuniary advantage owing to an arrangement being made whereby the

River Barges in Sungari Near Harbin



Manchurian Grain Boats Near Harbin

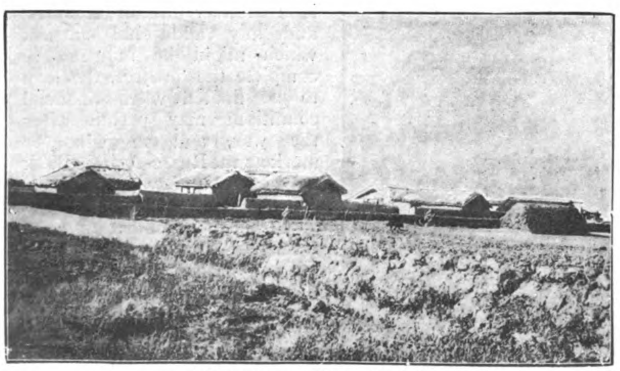
working of exchange cannot be so disastrous as in the case of other railway loans. Roubles being current in Harbin there will be no need to transfer the money first to Shanghai where it would have to be exchanged into sycee and thence back again into roubles on transfer to Harbin. The whole of the capital as required will be sent direct from Russia to Harbin, the Chinese Government gaining advantage by the simplicity of the procedure. The bondholders receive ample protection in the usual way by having the line, etc., as security, by the employment of qualified Engineers and Accountants, etc., and in addition by the arrangement that the earnings of the railway shall be deposited in branches of the Russo-Asiatic Bank.



Russian Church in Harbin

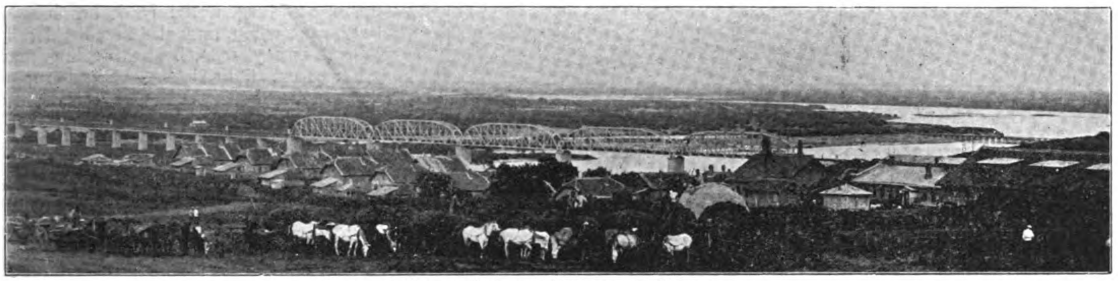
The idea of building a railway from Harbin to Aigun has long been entertained by the Chinese authorities in the Province of Heilungchiang (or Tsitsihar) as well as by the commercial people in Aigun, Mergen, Harbin and other centres in Northern Manchuria. In April, 1910, the Provincial Assembly of Heilungchiang drafted a scheme, which was approved by the Governor of Tsitsihar, for the building of a line from Harbin to Heilunfu (or Tunkan, as it is called in Russian) which lies some 210 kilometres northwest of Harbin. It was intended to form a Limited Company with a capital of Tls. 3,000,000, and it was hoped that local merchants and residents would subscribe the necessary amount. The Governor sent representatives through the district to popularise the idea, and in 1911 regulations for the foundation of such a company were published, the company to be called the Lan-Har Railway Company. Engineers were instructed to make the necessary surveys, but up to the end of 1912 an amount not exceeding $100,000 was all that was raised by private subscription, though the Peking Government was induced to promise a subsidy of Tls. 1,000,000 without interest.

In 1913 the question was again brought before the Provincial Assembly of Tsitsihar, some members being energetic and sanguine in their advocacy of the scheme. In their speeches they particularly emphasised two points, one that if the Chinese built the railway themselves foreigners would thus be prevented from asking for the right to construct it, and another that the railway would facilitate the movement of troops and thus serve to check the raiding Hunghutzes, or brigands, who were often used as a pretext by foreigners to interfere in China's administration in Northern Manchuria.



Manchurian Farm House

Jewish Synagogue at Harbin

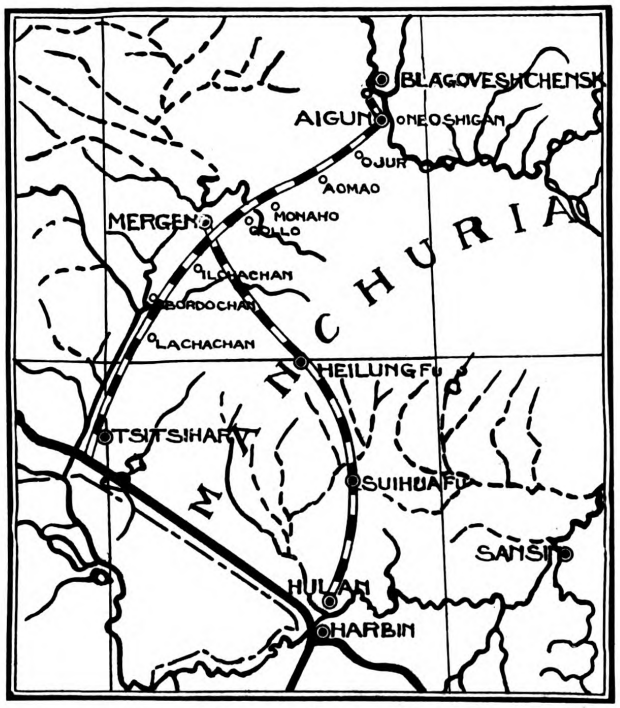


Bridge Over the Sungari at Harbin

The project of 1910 contemplated the building of a narrow gauge railway, while the second one had in view a line of standard gauge, as in use in China. As, however, the most sanguine advocates of the scheme had to admit that they could not raise sufficient capital to carry it out in its entirety they suggested to begin by building the line from Harbin to Hulanchen, about 20 kilometres from Harbin, and from there to Hailunpu, about 175 kilometres from Harbin.

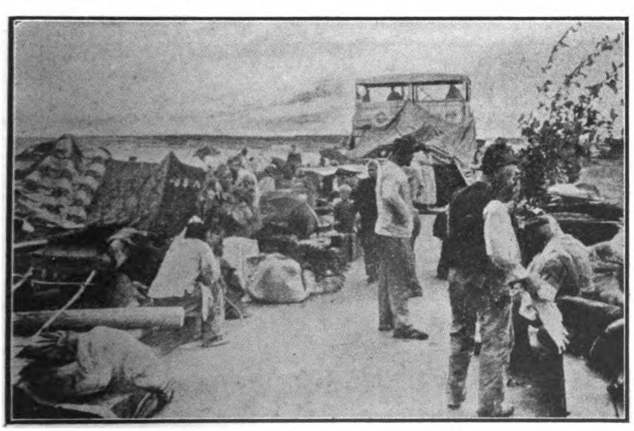
This railway was estimated to cost $7,000,000. It was hoped that with assistance to the extent of Tls. 2,000,000 from the Peking Government the balance could be found locally. The Central Government, however, did not seem to be disposed to advance that sum, probably having some doubt as to the capability of local people finding the balance.

For about two years the scheme showed no signs of development. The Russo-Asiatic Bank then offered to furnish the necessary capital, and the Minister of Communications in Peking entered into negotiations with Mr. L. DeHoyer, the representative of the Bank in Peking. Negotiations began in August, 1914, and lasted until March 27, 1916, when the agreement was signed.

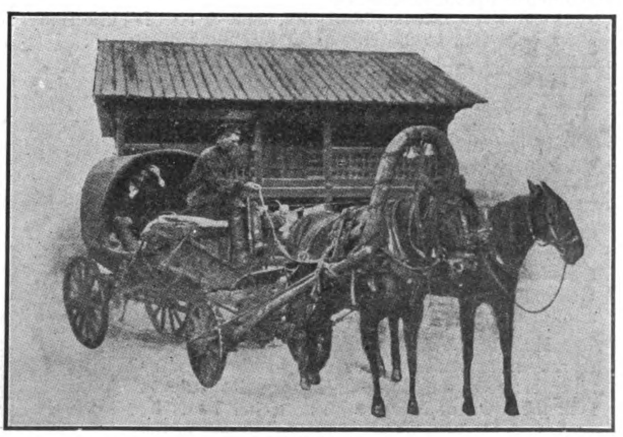


Map of Northern Manchuria Showing the Route of two New Lines from Tsitsihar to Blagoveshchensk via Mergen and from Hulan (Harbin) to Mergen—Existing Lines Shown in Black

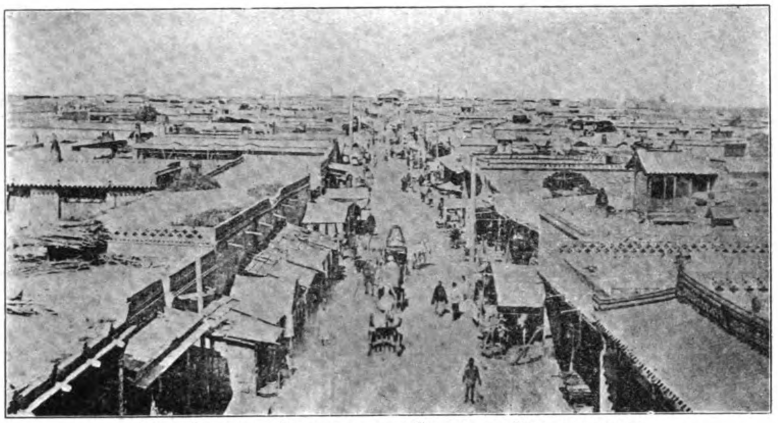
Apart from its value to Russia as a means of consolidating the interests of that nation in Northern Manchuria, the railway will open up an extensive region of valuable country, and will materially assist the work of colonization set afoot by the construction of the Chinese Eastern Railway. Before the building of that line virtually the whole of North Manchuria was a wild uncultivated country. The very sparsely populated areas about the Sungari River and its affluent the Hulan River were the lands of the Mongolian tribesmen known as the Horlos, while further north came those of the Olots, and still further north towards Mergen those of the Daurs. In the smaller Khingan mountains were tribes living on the chase, and only in the extreme north along the Amur River were there a few settlements of Manchu Bannermen. At this time there was only one small town



Russian Colonists on Amur River Steamer



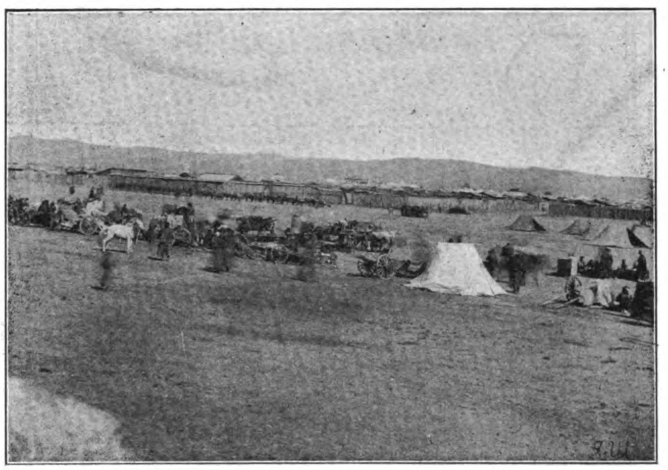
Russian Transportation on the Tsitsihar-Mergen Highway



MAIN STREET OF TSITSIHAR, THE CAPITAL OF HEILUNGCHIANG

worth mentioning, except Aigun, on the Amur River, and that was Heilungcheng on the Hulan River.

With the construction of the Chinese Eastern Railway great numbers of workmen and coolies were transported from China, mostly from Shantung Province. They earned comparatively large wages, and settled down in proximity to the railway. Thus were created the first districts in the zone of the Chinese Eastern Railway to the north of Harbin, the districts of Hulanfu, Suihuafu and Hailunfu. The advent of Chinese settlers caused the Mongol tribesmen to be pushed gradually farther and farther westward towards the Barga, and with their withdrawal the rich lands watered by the Sungari and Hulan Rivers were put under cultivation.



MONGOLIAN MARKET ENCAMPMENT IN NORTH MANCHURIA

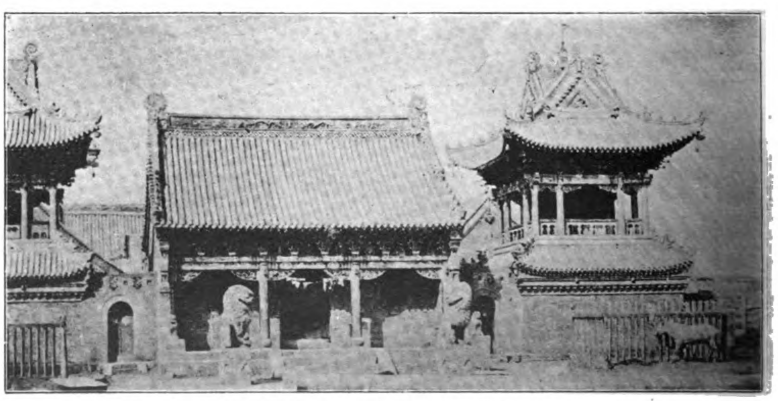
Immigration was developing most satisfactorily when the Boxer rising of 1900 put a stop to Chinese progress in this part of the Empire for six or seven years. In the last years of the Manchu regime a sound and serious scheme of emigration was launched by the Peking Government, in accordance with which, as is well known, Inner Mongolia, some parts of Turkestan and Manchuria had to be colonised by Shantung, Hunan, and other Chinese peasants. The Governor of Tsitsihar had to follow regulations issued by Peking, but the greatest facilities were accorded to colonists, enabling settlers to push northward until Heilunfu was reached. The Province of Heilungchiang, (Tsitsihar) was divided into the six districts of Heilungchiang, Suhuafu, Heilengfu, Mergen, Heiheifu and Aigun, roads were built between the district towns and telegraph lines were erected. In 1909 the old system of government under a Tartar General was abolished and a purely Chinese administration was inaugurated.

Most of the colonists naturally busied themselves in agricultural pursuits in the country lying between the Chinese Eastern Railway to near the town of Mergen. The richer lands lie near the Sungari River and its affluents, the Hulan and the Tunkan Rivers. Further to the north of Mergen the land becomes poorer, but on the whole may still be considered fertile. Wheat, barley, oats, beans, kiaoling, maize and other cereals flourish, the average crop per acre being 1,440 lbs.

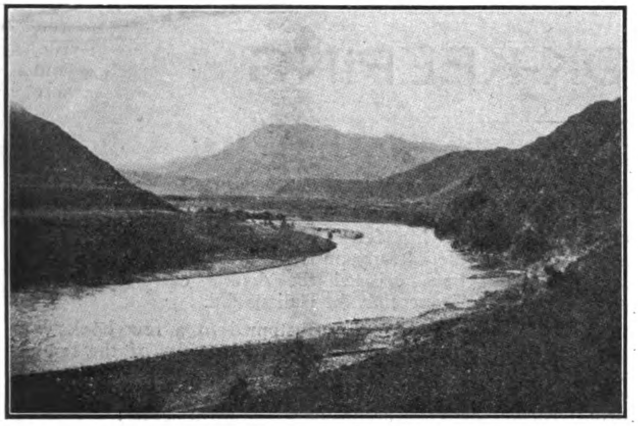
The northern region, which has as its centre the Amur River, is less rich from the point of view of agriculture. The winters are very cold, the summers short and the rainfall heavy. Wheat and oats are, however, grown with some success but the crops are about half that of the southern section. Insofar as other products are concerned there are deposits of graphite north of Suihuafu, and near Mergen on the River Hunhai are coal fields. Between Mergen and the Amur River there are extensive forests, while precious metals exist in the mountains.

Although the location of the line has not yet been made it will probably have a length of 725 kilometers between Harbin and Heiheifu, and will connect the following towns:— Hulancheng, Suihuafu, Heilunfu, Erkeshan, Dadun, Mergen, Aigun, Heiheifu. The railway between Harbin and Heilunfu would pass about 75 villages or settlements, while in the following 200 kilometers settlements of colonists would be tapped, though they are far from being dense. To the north of Mergen the population becomes scarcer. It was estimated about two years ago that the region through which the railway will pass had a population of about 2,000,000 while 3,000,000 acres were under cultivation. The experience of the Chinese Eastern Railway indicates that with the construction of the new line great numbers of people will settle in the vicinity.

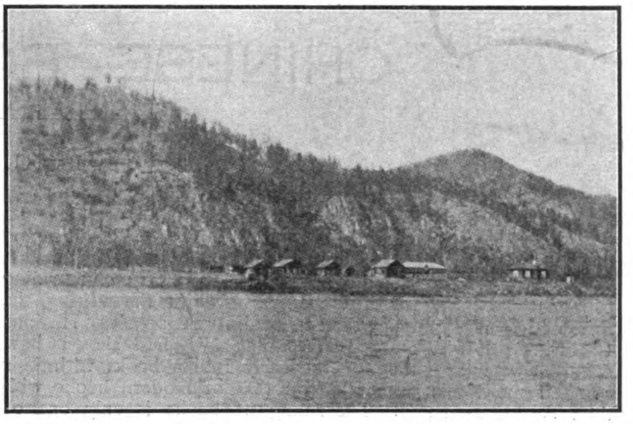
The products of this region have up to the present time been transported to markets in junks and tow-boats down the Hulan and Tunkan Rivers to the Sungari River and Chinese Eastern Railway. To reach the market from Tsitsihar the products go down the Noni River to the Chinese Eastern Railway.



YAMEN OF CHINESE GOVERNOR AT TSITSIHAR



WIDE BEND OF THE AMUR NEAR BLAGOVESHCHENSK

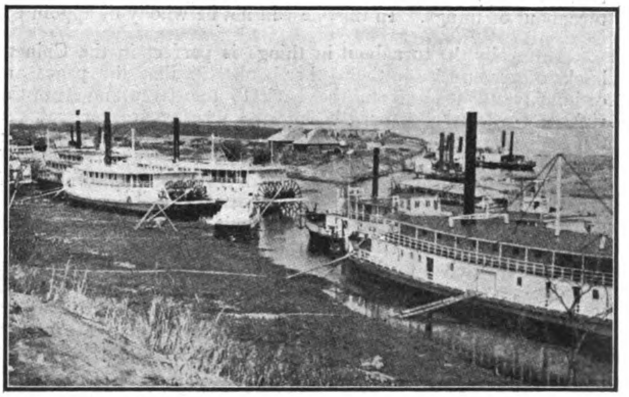


AMUR RIVER SETTLEMENT

Between Tsitsihar and Mergen the railway will follow the valley of the Noni River, and will tap a country already largely cultivated.

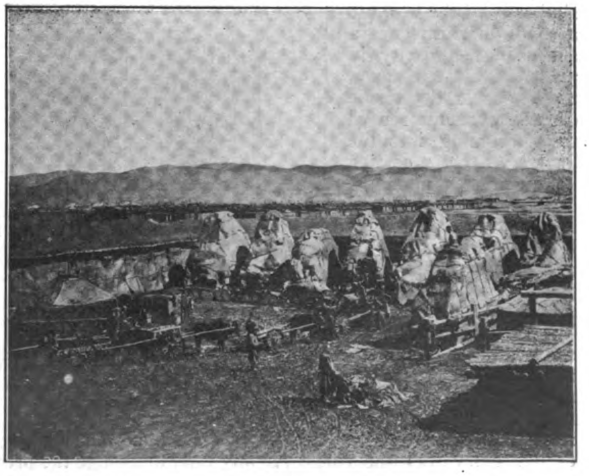
The development so far undertaken in the territory would be sufficient to make the projected railway pay between Harbin and Mergen, but the section between Mergen and the Amur River is not likely to pay until colonists take up the land and develop the natural wealth. It is fair to estimate, however, that within three or four years after the opening of the line there will be sufficient freight to balance expenses. In addition to the products of the country the line will also carry from the south imports such as machinery, cotton goods, tobacco, salt, paper, and other supplies for the colonists. Great need is felt for such imports owing to the present difficult means of transportation causing prices to be excessive.

RAILWAY CONSTRUCTION IN THE AMUR REGION



RIVER STEAMERS TIED UP FOR WINTER AT BLAGOVESHCHENSK

MONGOLIAN HOUSEHOLD IN HOLIDAY ATTIRE



MONGOLIAN SETTLEMENT IN NORTH MANCHURIA

TRANSPORTATION IN CHINA

[Extract from Address by Mr. Sidney J. Powell, A.M.I.C.E., F.R.G.S., Before the Engineering Society of China]

China is full of heart-breaking instances of waste of power and misdirected energy, which, under an honest and really patriotic administration, could be turned by engineers into channels of national content and wealth. When one has actually seen what has been done in countries like Egypt and India by railways and improved waterways, in bringing contentment and well-being to the inhabitants, to turn to China and see her infinitely superior resources running to waste makes one despair.

The world now is too much everyman's land for China to stand out. Transportation facilities have opened the whole world up to universal trade. It is for China to do her own developing. If she does not do it herself, it will be done for her.

While there is yet time, let her do it herself by honest administration of funds for the country's welfare; if not, she will lose inevitably those "sovereign rights" of which she is so tenacious, but which she has no right to retain if she does nothing to deserve them. It is modern justice, and modern justice will prevail.

No country in the world, calling itself a civilized country, has such poor means of transportation as China, and this is the result of China's attitude in the past towards Western nations. Whilst the West has been for the last two centuries hurrying up the passage of people and merchandise from point to point, China has stood aloof, content to let the outer world go on rushing about while she drowsed on and lived on her means.

To get paying results a knowledge of practical things is absolutely necessary and the Chinese have not the necessary technical knowledge, or, rather, do not as yet know how to apply that knowledge. The Chinese have very few engineers at present, but they have a great respect for engineers, much more so than for commercial men, whom they can beat at their own game. They realise that technical men know something and apply their knowledge in a way which, in its results, is startling to a people who have been used for so many centuries to getting about on foot or in wheelbarrows and to grinding their corn and weaving their cloth by hand power.

There have arisen in China many enlightened Chinese who know now that it is the duty of their nation to take their place in the world in endeavoring to improve the lot of the struggling agriculturist and merchant who have been handicapped so much by the lack of means of getting the result of their labors on to a market. A nation which takes no pains to improve the lot of its inhabitants is doomed to extinction nowadays. They must all come in or go under.

The present world catastrophe is due to an attempt to bring under one control the world's resources and the nations of the world must see that this cannot happen again, making sure that their peoples are given every opportunity of developing their resources and improving their position commercially, so that, out of the wisdom to be gained by taking part in the world's trade, they may be fitted to aid in world councils for the peaceful development of the world's resources and, in the unity of opinion thus gained, prevent any upstart taking advantage of the world's confidence. The only protection against war is a healthy and prosperous population. China is a very long way behind in the question of the amelioration of the masses, the sufferings of some of her population are intense. The industrious poor in Europe have opportunities for betterment provided for them—those in China hardly any, and the way to provide forthe betterment of the masses is to provide them with cheap and speedy transportation. This can be effected by railways and improvement of waterways for boat traffic.

After referring to the number of utilities created by railways, the production of raw material and the concentration of finished goods which they make possible, Mr. Powell pointed out that the railway systems at present working in China covered a mileage of over 4,000 miles and there were some thousands of miles under construction or projected. Some of these existing railways had been built at great cost and were over-capitalized, largely owing to the ridiculously high cost of obtaining permission to build them and this, whilst an evil and tending to arrest development, had its bright side in proving that railways in China are paying concerns despite adverse financial conditions. If they were not, there would not be such a scramble to get and pay for concessions to build them.

Mr. Powell then proceeded to speak of a number of rich districts which might greatly be benefited by having narrow gauge railways built as feeders to the existing regular (4 feet 8½ inch) gauge railways or to the waterways. These narrow gauge feeder railways only cost from £800 to £1,000 per mile as against about £10,000 per mile for the broader gauge road and the light gauge road could carry, if worked up to its fullest efficiency, as much traffic as any railway in China was at present carrying. When the light railways began to approach their full carrying capacity they could be converted into wide gauge roads, and the latter given double tracks.

He advocated two or three such railways connecting the rich pastoral district north of the Great Wall in Chihli, to feed the Chinese Government Railway which runs along the coast of the Gulf of Pechili. Two or three in Northern Shansi, connecting to the Pehan Railway in Shansi and the main trunk line in Chihli and Honan. Two or three in Southern Shensi, connecting with the above railway at the capital Sianfu. Every province in fact would be benefited by having these inexpensive railways.

It could be an excellent object lesson for the rest of China if such a railway were built from Wuhu to Shanghai. This railway could bring most of the down river traffic into Shanghai, cutting off the roundabout route via Chinkiang—avoiding the dangerous passage through the quicksands at the Lanshan Crossing and the navigation and heavy pilotage charges up the Whangpoo to Shanghai. Such a railway would effect a saving of at least two days in the down journey from Hankow.

Another instance of the lack of economy in transportation in China, the lecturer said, was the way in which cargo was handled at Shanghai, Tientsin, Hankow, etc., especially in respect of the amount that went backwards and forwards over the foreshore when sold to an up-country buyer. The remedy was that the railways should be connected to the wharves and should have large areas with bonded godowns and open storage places to which all their roads would connect and the cargo that the railways and steamers brought in should be bought and sold out of these rail-connected areas.

After referring to the wonderful work achieved in India and Egypt by light railways and agricultural roads, of which there are in Egypt some thousands of miles, Mr. Powell dealt with water transportation; and, in passing, referred to the possibility of installing hydro-turbines in the Yangtze Gorges which would furnish power for operating locks and supplying cheap power for railways in central China; such works being combined with locking facilities on the river itself, thereby removing the great navigation dangers and opening up a great waterway to the richest province in China, namely Szechuan. In spite of the natural advantages enjoyed by China in the matter of waterways, there were intolerable limitations to their use. For example, the draft of a vessel must not exceed 6 ft. if it was to proceed beyond Hankow to Ichang. It must not exceed 2 ft. if it was to get to Changsha during several months of the year, and Changsha was almost as rich a trade centre as Canton, it is certainly a much finer city. Numerous other instances were quoted, pointing to neglect of opportunities which if taken might prove of inestimable advantage.

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Manila Railroad Purchase.—Commissioner Clyde A. DeWitt of the Board of Public Utilities is in the United States, with authority from the governor general to carry on negotiations for completing the purchase of the Manila Railroad Company's lines on Luzon. It will be remembered that the memorandum agreement between the chief executive and the president of the local company, which outlined the terms governing the transaction, summarised in *The Far East.rn Review* for February, was signed late last fall and formally ratified by the legislature in February, the latter body conferring upon the governor general the right to negotiate the purchase for the government of the Philippine Islands. The deal is now practically closed, and while the final papers will probably be signed in Manila, it is understood that there are certain formalities remaining which require the presence of representatives of both contracting parties. Mr. DeWitt, under the authorization just granted him, will be empowered to act for Governor General Harrison in conference with the railroad company's directors in the United States.

S. M. R. Traffic Returns.—The South Manchuria Railway traffic returns for March totalled Y2,405,397.35, a daily average of Y77,593.46, and a decrease of Y16,025.48 per day from the corresponding month last year. The total traffic receipts for the fiscal year, ending in March, amounted to Y24,653,742.62, and the net increase on the preceding fiscal year decreased to the nominal sum of Y35,619.28.

The Railway's calculation of the increase for the last fiscal year is at a wide variance from the above. According to their calculation, the total traffic receipts for the fiscal year amounted to Y23,737,817.41 as against Y23,216,721.52 for the preceding fiscal year, yielding an increase for the last fiscal year to the amount of Y521,095.89. The comparison of the detailed figures is as follows:—

	Fiscal year 1915	Increase over 1914
No. of passengers ...	3,661,824	44,277
Passenger receipts ...	Y 4,761,902	594,734
Goods tonnage	5,843,139	157,191
Goods receipts	17,574,906	24,756
Warehouse receipts ...	244,580	67,441
Sundry receipts	1,156,428	34,162
	Y23,737,817	521,095

The S. M. R. Co. estimates for the current fiscal year as approved by the Government under date of April 20, are as under:—

	Receipts Yen	Expenditures Yen
Railway { Main & Branch Lines	22,180,254	7,385,285
Railway { Mukden-Antung Line	2,103,008	1,388,520
Shipping	1,466,937	1,447,226
Electricity	1,192,425	768,732
Gas	267,867	152,833
Harbour	2,376,048	2,141,942
Mining	14,849,049	13,135,674
Hotels	138,237	309,886
Railway Area	1,307,742	2,716,121
Sundry profit & loss ...	50,000	200,000
Interest	335,000	5,808,510
General expenses	—	340,047
Emergency fund	—	501,000
Total	46,367,567	39,469,582
Net profit		6,897,985
	Y46,367,567	Y46,367,567

Shantung Railway Returns.—The monthly traffic receipts of the Shantung Railway for February amounted to S. Y310,000, giving a daily average of about S. Y10,700. Compared with February, 1913, under the German regime, the daily average was about Y9,000 and that for the same month in the succeeding year amounted to about Y12,000. The aggregate returns since the Line passed under Japanese management reached about S. Y3,500,000, promising to attain S. Y4,000,000 by the end of the present fiscal year.

The estimates of expenditures for the Railway during the current fiscal year amount to Y3,300,000. Among the new undertakings may be counted the construction of a medical station at Tsinan, a Primary School at Tzuchuan (at which place a warehouse belonging to the Tzuchuan Colliery is now doing duty as the school-house), and housing accommodation for the Railway people along the line.

Siam Railway Receipts.— Approximate receipts in Ticals for February from the Broad gauge (872 klm.) lines compared with actual receipts of February, 1915 (Siam Calendar 2457) is as follows:

	Year 2458	Year 2457
Passengers	Tc. 358000.	Tc. 250849.
Goods	188000.	224251.
Others	4100.	3699.
Total	Tc. 550400.	Tc. 478799.
April to Feb.	Tc. 4,252,744.	Tc. 3,887,914.

The considerable fluctuation in Traffic Receipts is due to the Phrabad and Phrathen festivities falling in the month of January last year and Feb. this year.

Novel Railroad Bridge for Java.—A bridge built for the Holland government railroad over the Serajoe River in Java has been made complete in the shops in Holland, and so carefully has this been done that no field work will be required in erecting the steel structure other than that of connecting the members. The bridge site is far from any kind of shop facilities, and to make sure that the structure would go together properly it was first erected as carefully as if on its permanent location, in the yards of the manufacturing company in Holland. Following this it was taken down and shipped by steamer to Java. The bridge is of unusual design, consisting of three arched spans of steel connecting with short, straight trusses over the piers. It has a total length of 698 ft. 10 in., and weighs 580 tons. It is designed to carry a single-track railroad having a gauge of 3½ feet.

Japanese Railway Estimates.—According to the practical estimates of the Imperial Japanese Government Railways for the next fiscal year, as adopted at the recent conference of the Directors of the District Departments, the aggregate receipts were put at Y122,020,702 and the aggregate expenditures at Y100,874,818, the net profit amounting to Y21,145,884.

Double Track Open Soon.—The double track line, which is being built between Ofuna junction, on the Tokaido main line, and Taura, near Yokosuka, is nearly completed and will be open for traffic by the end of May. The work of improvement between Yokosuka and Taura, which was planned to be made this time, was postponed owing to the increasing cost of materials.

Canton-Wuchang Line.—On the Canton-Wuchang Railway work is procceding apace. The workmen's train runs daily now to within a few li of Sienlin. A new extra-mural Wuchang will be built within a few years as it is now seen that the full running of the railway will necessitate wide expansion of the existing city.

Tasmania Railway Project.—Recently an offer was made by two of the leading business men of Hobart to construct a railway from Hobart to the west coast of Tasmania. There has been a demand for this railway for a number of years, but as the State of Tasmania had not been in a financial position to construct it, some years ago it offered certain grants to a syndicate as a bonus for the work. The syndicate did not take advantage of this offer, and now the business men mentioned have offered to construct the road if the Government will give them the same terms that were offered to the syndicate. The railway would develop a large and rich section of Tasmania. It would be about 140 miles long, and would cost between Gold $4,000,000 and $5,000,000. An Australian firm had offered to build the road for Gold $30,000 per mile for the old syndicate, if the latter would furnish the rails.

Canton-Hankow Railway Bridges.— The contract for the supply of bridge girders for the Canton-Hankow Railway (Hupeh-Hunan section), a part of the Hukuang Loan Railways, has been awarded to Messrs. Jardine, Matheson and Co. (Ltd.), and the Yangtze Engineering Works (Ltd.). The Yangtze Engineering Works (Ltd.), a Chinese concern, has been awarded the contract for the supply of 209.7 tons of the girders, short spans, at a total bid of Gold $23,890, delivery to be completed in 5 months. Messrs. Jardine, Matheson and Co. (Ltd.), tendering on behalf of the United States Steel Products Co., were awarded a contract for the supply of 18 spans of 150 feet and 6 spans of 200 feet at an aggregate tender of Gold $475,304, delivery to be made not later than September 30, 1916.

The time of delivery was a factor in awarding the contract, as it was the desire of the railway to complete the line from Hankow to Changsha during the current year. It was specified that the bridges should be shop erected, which is contrary to the best practice prevailing in the United States. Under the resolutions of the May conference of 1915, American manufacturers are entitled to tender for all bridges provided for by the Hukuang Loan, under the recognized standard practice prevailing in the United States. Therefore a protest was filed against the specifications, and in the award of the contract, the American manufacturers agreed to shop erect one span of each class.

New Road to Open Mongolia.—There are three inlets into Mongolia: one from Changchun going up the Sungari to Taonanfu; the second from Ssupingkai on the South Manchuria Railway to Kailu via Chengchiatun; the

small combinations, the initial cost of establishing branches throughout China is practically prohibitive. But it is essential that any concern that wishes to carry on business on a really large scale in China should be represented in every important centre, and this could easily be accomplished by a combination on the lines that we have suggested. Co-operation of British and American interests in China on an extensive scale is feasible and desirable, and it is sincerely to be hoped that no economic arrangements resulting from the war will prevent its inception.

THE FINANCES OF CHINA

The declaration of a moratorium by the Chinese Government on May 12 was not altogether unexpected. In the provinces in which independence has been declared the branches of the Bank of China and of the Bank of Communications were taken over by the revolutionaries. It is stated, probably with justification, that in these branches were large quantities of notes that had not been issued, which were immediately placed in circulation. Furthermore it is alleged that the subjects of a certain Power, that has shown rather more than platonic sympathy with the revolutionaries, have been accumulating the notes of the two banks in question with the object of creating embarrassment by suddenly presenting a gigantic number for payment.

Apart from sinister activities of this kind, the action taken by the Yokohama Specie Bank in withholding payment of the surplus salt revenue which Sir Richard Dane had certified might safely be handed over to the Chinese Government, caused serious difficulties. Although the amount withheld was not of itself of great importance, the action of the Japanese bank practically compelled the other banks in the Consortium to announce that in the future they would follow its example. Thus the Chinese Government found itself deprived of a monthly revenue of several million dollars at a time when, for obvious reasons, ordinary revenue collections were below the normal. In such circumstances it was deemed the part of wisdom to take the steps necessary to conserve the silver in the possession of the national banks. It is declared that the banks hold sufficient silver to meet foreign engagements for several months to come, and to pay the army. China's credit depends upon her ability promptly to discharge her obligations to foreign investors, and, though it sounds paradoxical, the declaration of a moratorium was regarded by the Government as necessary to preserve her credit.

Apart from other considerations, it is regrettable that a financial crisis should be created in China by the action of one of the foreign concerns which obtained certain powers by the terms of the Reorganisation Loan Agreement. The Chinese have always been bitterly opposed to the idea of an extension of foreign control over the finances of the country. The excellent results obtained by the co-operation of foreign and Chinese officials in the administration of the salt monopoly has, however, convinced responsible Chinese that, without parting with control, they can with advantage make full use of sympathetic foreign assistance in the collection of revenues. Had nothing occurred to prevent it in all probability foreigners would, in the near future, have been engaged to reorganise other revenue producing services. Undoubtedly this possibility has been rendered more remote by the action of the Consortium taken at the instigation of Japan. The Chinese are naturally inclined to doubt the benefit of reorganizing their revenue producing departments if the increased revenues can be withheld upon the initiative of any Power that professes anxiety with regard to China's ability to meet her engagements. The danger of political considerations operating to create such anxiety is obvious.

While the financial situation in China is far from bright, it would be easy to be unduly pessimistic. The European War has adversely affected the Customs receipts, but it is reasonable to expect that they will show an unprecedented increase when the belligerent Powers transfer their activities to the commercial arena. Moreover the differences between the Central Government and the independent provinces must be settled sooner or later, and with the restoration of normal conditions the revenue will also speedily become normal. Notwithstanding the loss caused by dislocation of trade on account of the unsettled conditions, there has been no large amount of actual destruction of wealth during the hostilities in the South of China. For these reasons the financial future of China is less gloomy than it would appear to be from superficial observation.

CHINESE EASTERN RAILWAY RETURNS

The returns of the Chinese Eastern Railway for the conveyance of passengers, luggage and goods, for the year 1915, are as follows:

Passengers, by general and reduced tariff, including immigrants and military people		1,286,655 persons.
Luggage and parcels		386,515 pouds.
Amount collected for the conveyance of passengers and luggage	Roubles	5,613,738,98
Various goods transported		139,503,251 pouds.
Increase over 1914		57,084,268 „
Total Amount collected, including various other items of revenue independent of the tariff, and receipts from supplementary undertakings	Roubles	37,802,413,37
Increase over 1914 ..	„	13,965,286,29
The net profit is expected to be about..	Roubles	18,000,000

Following is a statement of the totals of receipts and expenses from 1911 to 1914:

Years	Receipts.	Expenses.	net Profits.
1911	Rs. 19,577,429.51	Rs. 15,830,971.65	Rs. 3,746,457.86
1912	20,353,023.84	15,434,360.94	4,918,633.90
1913	22,797,535.57	15,575,166.44	7,222,369.13
1914	23,837,127.08	15,891,980.15	7,945,146.93

Some details as to the traffic in cereals over the Chinese Eastern Railway also have recently been made available and show that the amount of produce carried by the Chinese Eastern Railway during 1915 totalled 32,096,288 pouds, beating the previous record of 26,000,000 pouds for the season 1911-1912 by more than 6,000,000 pouds. It is noticed from the past experience that the European War has had only an inconsiderable effect on the transportation of export produce by the Railway. Statistics for the last season compare with those for the preceding one as follows:—

Booked to Vladivostok.

	1913-1914 Pouds	1914-1915 Pouds
Beans..	24,039,935	23,032,102
Other cereals	2,127,974	4,192,959

Transferred to S. M. Railway

	Pouds	Pouds
Beans..	413,694	6,544,354
Other cereals	1,720,251	2,667,449

The 1914 report goes into still further details as to the diverse character of the traffic in agricultural products in the region traversed by this railway. The 1914 production seggregated under the chief areas of origin is as follows:

	via Pogranichnaya pouds	via Manchouli pouds	via Kwanchengtzu pouds	Total pouds
Wheat	2,992,80	34,300	762,000	3,789,170
Oats	170,900	37,200	200	208,461
Millet	464,800	200	300	465,440
Kaoliang	61,300	13,100	13,300	87,865
Buckwheat	105,110	—	9,300	164,458
Barley	69,600	1,000	10,600	81,290
Maize	86,600	—	1,600	88,318
Sweet peas	22,900	3,600	—	33,554
Beans	17,179,000	13,700	1,869,200	19,061,900
Flour	73,500	8,800	700,100	782,587
Wheat bran	36,000	800	—	36,888
Bean Cake	1,488,000	—	20,200	1,508,345
Seeds	508,500	5,500	3,800	517,915
Sundries	2,100	2,300	1,300	5,789
Total	23,311,700	90,500	3,392,300	26,825,140

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

South Manchurian Railway Estimates.—The S. M. R. Co. Enterprise Estimates for the current fiscal year are larger than those for the preceding year by about Y6,000,000, and are scheduled under various headings as follows:

ENTERPRISE ESTIMATES

Mining		Y5,741,273
Railway	Main & Branch Lines.	2,562,350
	Mukden-Antung Line.	207,205
Harbour		1,793,873
Improvements in Railway Area and land items		858,507
Buildings		411,694
Electricity		159,615
Gas		74,298
Hotels		15,985
		11,824,799
Emergency fund		500,000
Total		Y12,324,799

The principal items of enterprises, both new and continuation, are as follows:—

Mining: Acquisition of appliances and installations for introducing the sand-flushing method into the Fushun Collieries. Purchase of the area for gathering sand. Extension of sidings for transporting coal and sand. Excavation of pits for sand flushing. Construction of sand waggons, locomotives, and passenger cars. Perfection of draining, coal screening, and transporting equipments. Extension of the Water Gas Producer Factory. Construction of a sulphate of ammonia manufactory. Construction of additional housing accommodation and extension of the waterworks.

Main and Branch Lines: Double-tracking of Suchiatun-Mukden Section. Construction of retaining walls and embankment, draining, cutting, etc. Continuation of the double-track bridging work over the Hun, and construction and repairing of other bridges. Laying of rails to the total length of about 38 miles. Construction of additional sidings. Improvement of points and crossings. Foundation work of new engine-shed at Dairen. Construction of engine and car sheds at Mukden. Improvement and installation of signalling appliances. Laying of additional telegraph and telephone wires. Extension of electric repairing shops. Additional equipments for Railway Workshops, Shahokou.

Mukden-Antung Line: Cutting work and construction of drains and culverts. Improvement of points and crossings. Improvement and installation of signalling appliances. Purchase of tarpaulins. Construction of four locomotives for goods trains, four 1st class cars with sleeping accommodation, four 1st class cars, ten 3rd class cars, four parcel cars, and 80 flat cars.

Harbour Works: Reclamation of shorefront at Jijiko (East End) and Hama-cho. Continuation of dredging operations in the Harbour. Continuation of construction of Northwest Breakwater and Wharf No. 3. Reenforcing of west quay wall of Wharf No. 2. Removal of Concrete Blockyard. Re-bunding work at Yingkou and Antung. Continuation of construction of a permanent warehouse at Dairen Wharves. Installation of two cranes for cargo-work at the new warehouse. Sundry improvements at Antung, Yingkou, and Shanghai.

Improvements in Railway Area: Water supply, construction of roads, bridges, drains, etc., at the Railway Towns. Construction of isolation wards at Dairen and Penchihu and a ward for the weak-minded at Mukden; and purchase of necessary medical instruments, etc. Construction and extension of schoolhouses at Kaiyuan, Ssupingkai, and Changchun. Construction of school houses for the Chinese Primary Schools at Hsiungyocheng and Changchun, construction of dormitories for South Manchuria Medical College and South Manchuria Technical School, etc. Extensions and alterations for Agricultural Experimental Stations and Central Laboratory.

Buildings: Construction of new Wharf Office Building, Dairen, Stores Depot, and a storehouse for Harbour Works Office, etc.

S. M. R. Traffic Returns.—The South Manchuria Railway Traffic Returns for April totalled Y1,994,540 giving the daily average of Y66,484 and showing a decrease from the figures for the corresponding month of last year of Y21,518.

Increase of Y6,000,000 in the estimates for the current fiscal year over those for the last fiscal year has been announced. The total deficit to be met in the current fiscal year is about Y8,000,000, which amount will be raised by further calls on the Company's shareholders probably in October and again in April next year.

Shanghai-Hangchow Railway.—A peculiar state of political affairs has stopped traffic over a 21 mile section of the Shanghai Hangchow Railway whose tracks lie in both Kiangsu and Chekiang provinces.

The Shanghai-Hangchow Railway, it is stated, is quite ready to run through trains to the Chekiang capital, but it is pointed out that Chekiang province has declared its independence of the Peking Government and Kiangsu has not. Consequently a state of semi-hostility exists between the two provinces. This political condition may exist only in theory, but until the two provinces are of one mind politically, the military authorities of each may prefer that through railway traffic should be suspended. Trains are running from Shanghai to Sungkiang, and from Kashai to Hangchow. The distance between the two stations, which may be covered on foot, by launch, or railway trolley, is 21 miles. When the military authorities of both provinces are in full agreement through traffic will be resumed.

Russo-Japanese Through Traffic Conference.—Altogether 43 items were agreed upon at the Russo-Japanese Through Traffic Conference which was signed on April 28th, and the Conference brought to a close. The next Conference is expected to be held at Petrograd in November. The chief features of agreements reached are as under:—

Instead of holding a formal meeting of the respective delegates once annually, a meeting may be called whenever occasion may require. As regards the issue of Japan-Manchuria excursion tickets the Russian delegates shall arrive at a final decision after their return to Petrograd. The fall of the rouble shall not be made a cause of loss to the Japanese members of the compact. The interpretations of the through goods tariff and shall be made uniform. Certain additions shall be made to the lists of the through traffic stations as well as to the list of through goods. Matters concerning the freights on cotton goods and through railway goods in bond for transportation through Chinese territory also were settled.

Japan Plans Broad Gauge.—At a meeting of the Railway Investigation Commission which was held recently at the Railway Board, Count Okuma, the chairman, was absent, and Dr. Soyeda, assistant chairman, presided. The relative merits of the broad and narrow gauge systems for carrying freight were discussed. Dr. Furukawa, vice-president of the Imperial Railway Board, and Mr. Sugiura and Mr. Morimoto, both directors of the board, replied to inquiries raised by other members of the commission.

Under the plans for making the railway system of Japan a broad gauge system recently announced by the Railway Board, it is estimated, will take until 1943 for completion and will be carried out at a cost of approximately 1,408,000,000 yen. The outlines of this comprehensive project have been sketched in a report submitted by a committee which has made estimates of the outlays necessary and has even worked out the figures and measurements in connection with the tracks and rolling stock for the new system. The money necessary for the proposed change will come from the following sources:

From 1916 to 1940, 20,000,000 yen shall be transferred from the general accounts of the government annually, making 500,000,000 yen in all. The profits of the railways in those years will amount to 908,000,000 yen, making a total of 1,408,000,000 yen. Against this, the expenses of construction and the extension of new lines will be 317,000,000 yen; the expenses for repairs of various lines other than the broad gauge lines (Kyushu, Hokkaido, Shikoku, Sohu lines), 209,500,000 yen; the expenses of changing the line from Tokyo to Shimonoseki into a broad gauge line 232,000,000 yen; repairs after the change of that line, 49,400,000 yen; the change of lines other than the trunk line in Honshu into broad gauge lines 600,100,000 yen, which will bring the total up to 1,408,000,000 yen.

The expenses of changing the main line are estimated as follows: For the period to 1926 the outlays for railways, 192,625,784 yen; for machine shops, 5,393,500 yen; for cars 59,978,-545 yen; for electricity, 1,639,191 yen; for expenses connected with the railway tracks after the change, 4,805,000 yen; for cars in that connection, 12,090,000; a total of 276,533,040 yen. The disposition of disused rails, bridges, sleepers and cars is expected to bring in 44,270,970 yen and when this amount is deducted, the expenses will amount to 232,260,-270. Between 1926 and 1943, the expenses of the change, after deducting the sale of disused property, will be 297,162,450 yen. In the business department the entire amount needed will be 50,078,713 yen.

The standard gauge will be adopted for the main railways. The width of tracks will be 4 feet 8½ inches; the weight of the rails 90 pounds for the trunk lines and 80 pounds for the side lines; the height of the cars 15 feet 6 inches, the width 12 feet 3 inches; the weight of the locomotives, 108 tons for express passenger service, 86 tons for ordinary passenger service and 160 tons for freight service. The capacity of a passenger car will be 132 persons (third class); the average length 60 feet 6 inches. The average capacity of the freight cars will be 26.65 tons, with an average length of 24 feet 3 inches. The aver-

age number of cars in one train will be 87 for passengers, and the average capacity of trains will be 629 persons, or 30 cars of freight with a maximum capacity of 780 tons and an average capacity of 390 tons.

Japanese Travellers Save Money.—The economical tendencies which are now prevailing in Japan are marked especially among railway passengers. According to the figures given by the railway bureau in 1907, the number of the first and second class passengers decreased, while that of the third increased. This was again true in 1915. The figures for 1911 and 1915 follow:

	1911	1915
First class passengers ...	7,432	5,733
Second class passengers	162,043	161,737
Third class passengers...	2,830,854	3,125,103

Chosen Ry. Hotel at Pyengyang.—The local press reports that the authorities of the Railway Bureau of the Government General of Chosen have included in the budget for the next fiscal year (ending Mar. 31, 1917) an estimate for the erection of a railway hotel at Pyengyang, Chosen. Correspondence regarding supplies for this undertaking should be addressed to S. Inohara, Esq., general manager of the Railway Hotels, care Chosen Hotel, Seoul.

Railway Facilities at Vladivostok.—The British consul at Vladivostok reports that cargo arriving at that port now is proceeding to European Russia without any serious delay. This is the case with private cargo as well as with Government cargo. The number of cars leaving Vladivostok daily for Siberia and Russia is 200, each car carrying 1,000 poods (about 18 tons). As a rule 160 of these 200 cars are taken up for the conveyance of cargo belonging to the Government, the remainder being allotted to owners of private cargo. The distribution of space is in the hands of a committee, which meets every week, and is presided over by the commandant of the fortress. For some time, since Government cargo has been slack, there has been ample accommodation for the goods of private persons, and it is a matter of fairly frequent occurrence for this space to be partly unutilized. It will thus be seen that there may be said to be no congestion of goods at the port, since all merchandise arriving is proceeding normally. Additional berthing accommodation has been supplied recently at Vladivostok, but this does not at present increase the capacity of the port for general trade, since the new quays and several of the old ones are taken up by the steamers bringing railway material from the United States. There is at present, however, no lack of room for general cargo steamers.

Steel Cars on Indian Railway.—The Great Indian Peninsular Railway which recently successfully experimented with one steel passenger coach, has now constructed an entire train of that material. The train runs as the Bombay-Delhi Express, carrying intermediate and third-class passengers. Each carriage is 68 feet long and the body, including the roof, is of steel plate riveted and welded to steel supporting members, so that the whole of the body and the underframe, on which the former is built as one piece, are of steel. Inside the "shell" the fittings and furniture in touch with the passengers are of wood, as are the window frames, venetians, etc., while the actual lining is of asbestos heat-resisting composition, held up with wooden mouldings secured to the steel members. One carriage has all its internal woodwork made of Japanese ash as an experiment.

Siamese Railway Progress.—The Siamese Railway is making good progress. The line has been opened south of Koh Lah 26 kilometres to Huey Yang, and a further 50 kilometres south of the town to Bang Taphan. It is proposed to open the intervening gap between Bang Wa and Bang Taphan in August, when there will be through rail communication between Bangkok and Singgora. At present there is a tri-weekly train service from Trang to Nakon. The date fixed for the Bangkok-Kedah line to be opened is June, 1917, but doubtless there will be through rail communication before that.

Shanghai Tramways.—The following is the traffic return of the Shanghai Tramways (Foreign Settlement) for April, 1916, and for 4 months ended 30th April, 1916, with figures for the corresponding periods last year:—

	April, 1916.	April, 1915.
Gross Receipts	$118,791.02	$100,693.83
Loss by currency depreciation.....	31,305.01	27,216.18
Effective Receipts.....	$87,486.01	$73,477.70
Percentage of loss by currency depreciation.....	28.00	28.79
Car Miles run..	298,039	261,818
Passengers carried	5,252,402	4,362,344
	4 months 1916.	4 months 1915.
Gross Receipts	$472,298.07	$410,824.59
Loss by currency depreciation.....	123,322.76	109,479.02
Effective Receipts	$348,975.31	$301,345.57
Increase	$47,629.74	
Percentage of loss by currency depreciation.....	27.74	28 44
Car Miles run.	1,165,773	1,053,923
Passengers carried.	20,837,820	17,943,791

$ Increase 2,894,029 passengers or 16 per cent.

Shanghai to Hankow by Rail.—Now that trains are running daily from Hsuchowfu to Chengchow without change of cars, "via Nanking" has replaced the River trip via Hankow as the fastest route for Shanghai travellers to Kaifeng, Sianfu and Sanchowfu. This is due to the opening of the Hsuchowfu-Kaifeng section of the Lung-Hai Railway. From Chenchow, construction is being carried on towards Sianfu, and trains are running regularly to Nuanyintang, a nine hours' journey from Chengchow.

Manila Railroad Extension.—Opening up a rich copra producing country on the Pacific coast, and rendering the means of communication in that part of the Philippines much easier, the Manila Railroad Company inaugurated on May 8, a new line from Manila to Hondagua, in Tayabas, a distance of 240 kilometers. A party headed by Horace L. Higgins, president and general manager of the company made the trial trip. From Laguna province to Hondagua on both sides of the car track are rich coconutgroves and in Tayabas, long stretches of valuable forest land could be seen. It is the plan of the railroad company to extend the new line as far as Nueva Caceres, in Ambos Camarines, thus conneeting the Manila principal line with the detached line operating now in the Bicol provinces. But this project will not be undertaken for two or three years. With the opening of the new service, the present length of track operation of the company is 625 miles. From Hondagua there is a short line running to Calauag, toward the south. After the opening of the service, it is the intention of the company to establish steamer connection between Hondagua and the ports of Alabat, Sangirin, Mauban, Infanta, Baler, and Polillo (to the North), on the Tayabas Pacific coast, and to Quezon, Capalonga, Mambulao, Paracale, Mercedes (Daet), Naga anchorage and Naga wharf (to the South), in Ambos Camarines, thus bringing these ports and quicker and closer connection with Manila than the present all water route.

Censures P. I. Railway Plan.—The movement started by the Philippine government to purchase the Manila Railroad Company's lines, details of which have appeared in the last two issues of the Far Eastern Review, has awakened some antagonism on the part of capitalists who have large investments in the Philippines Charles M. Swift, head of the Manila Electric Railroad and Light Company, and President of the Philippine Railway, condemned the agreement reached between the owners of the Manila Railroad Company and the American administration by which the Philippine government is to purchase the road. According to the details of the agreement, President Wilson has given his sanction to the scheme and has also approved a plan to safeguard the owners of the $16,125,000 bonds now held in the Unites. The plan, however, does not countenance safeguarding the holders of Philippine Railway bonds, on which interest has been guaranted by the Philippine government.

"The Manila Railaoad, so called," said Mr. Swift, "is owned by an English corporation, represented in the United States by James Speyer. I have not been taken into the confidence of the Administration enough to know why this particular corporation is so specially favored over American ones.

"I understand that the first payment will exhaust most, if not all, the funds in the Philippine treasury, which are raised specifically for other purposes. As the Jones bill carefully restricts the power of the Philippine government to raise money by a bond issue, it seems a little inconsistent to rush through a sale that will make a further bond issue absolutely necessary, without any investigation of the circumstances."

SHIPPING

New Seattle-Pacific Line.—From Seattle comes the announcement that the Chinese-American Products Exchange Company has backed a group of Seattle business men who have formed a $5,000,000 company for a new freight service from the Pacific Slope to China, Japan and the Philippines. The Chinese-American Products Exchange Company has a capital of two million yen, with branches in Shanghai, Hongkong, and Manila. Lately it has been experiencing difficulty owing to the shortage of bottoms, and it has promised the newly organised Seattle shipping group to give it all its shipping business provided the new service meets its requirements. The company had announced its in ention of starting the new freight service within three months, but it was learned later that the company had already engaged the steamer Republic, 4,629 tons, to load for the Far East. Her departure date was then fixed for April 15. So pressing was the need for shipping space that the vessel was being loaded and repaired at the same time.

Volume XIII (Note:this volume has 19 monthly editions. The publisher made this adjustment in order that future annual volumes would be run for the calendar year from January through to December)

June 1916

Canton-Kowloon Railway Full page advertisement. 8 small photos of scenes.
The Coal Resources of China Contains a number of small photos of railway coal wagons at collieries.
The Administration of Chinese Governent Railways..Article by Dr C.C. Wang about the development and administration of Chinese railways.
The Railway in Chinese Development Article by J Selwin Tait comparing USA and China's railways.
Ssupingkai-Chengchiatung Railway Report that consent to build this line had finally been granted.
Shantung Railway Estimates Revolutionary disturbances had impacted earnings in May but had since improved.
Japan Discusses Changchun Line Discussions were taking place on the purchase of the line from the Chinese Eastern Railway.
South Manchuria Railway A shareholders meeting had been presented with the accounts.
Chinese Eastern Railway, The 160-mile Harbin-Kwanchengtzy section of the CER was to be transferred to the Japanese.

July 1916

Japan Buys Railway from Russia Further report that the sale of part of the CER to Japan had been settled.
Ssupingkai-Chengchiatung Railway The Chief Engineer, J Fujine was organizing his new staff. The survey had not yet commenced.
Hankow-Ichang Railway Locomotives Tenders had been invited in Pittsburgh for the supply of 3 locomotives.
Shantung Railway Locos. The railway had ordered 3 Consolidation locomotives from ALCO.
Swatow Railway Extension The company was surveying a one mile extension to the harbor waterfront.
Peking-Mukden Bridge The new Hsinminfu bridge had opened allowing through trains.
S.M.R. Buying Rails The company had resumed buying rails.
S.M.R. Calling Up Capital The 2nd payment on new shares had been called up.
C.E.R. Shops Burned The railways workshops had been destroted in a fire at Harbin.

August 1916

Boltless Rail Anchor Advert by the company's China sole agent, William Jacks & Co. Shanghai
Japan's New Manchurian Lines. Confirmation that the CER had sold the Chanchung-Laoshaokou section to Japan's SMR for 6 million Yen.
Chung Mun-Yew Reappointed A telegram reported that Chung had resumed control of both the SNR and SHR railways.

September 1916

Foochow Railway Survey -Report that survey for the line between Foochow and Mamoi (Pagoda Anchorage) had commenced.
Chao-Shan Railway Traffic Statement of passengers & freight carried and earnings.

Canton-Kowloon Railway A short update on the progress of construction and the sections opened to traffic.
Sunning Railway Earnings Takings had reached $800,000 for the year.
Canton-Kowloon Railway Traffic Passenger and earnings for the year 1915.
Samshui-Canton Railway Earnings for the year reported by R.C. Johnson, Engineer in Chief.
Russia and Chinese Railways Russia was to issue a $24.3million to China for construction of five lines in Manchuria.
Nanchang-Kiukiang Railway The Kiangsi Provincial Assemby opposed a Japanese loan for this railway.
Lift Ban for Munition Shipments Previous restrictions on ammunition being shipped by rail on the CER had been lifted.
Kirin-Changchun Railway The agreement for this line between China and Japan was being renegotiated.

October 1916
Railway Progress in China in 1915 A report derived from Maritime Customs Reports dated 1916

November 1916
American Railway Constructors Begin Work in China An eight-page report on the construction of a projected railway through Kwangsi province.6 photpographs and 4 maps.

December 1916
New Junction Line at Shanghai A report about lhe link between China's northern railway system and the Shanghia-Hangchow-Ningpo line being completed and inaugurated on 9 December. Seven photographs of stations, bridges and one map illustrating the link.
Kowloon-Canton Railway (British Section) A synopsis of the Annual Report for 1915
Recent Baldwin Locomotives for Export Description of three locomotives recently exported for the Canton-Hankow Railway. Three photographs and list of general data.
Wuchang-Changsha Railway Construction work on this line had been seriously affected by the war but attempts were being made to progress.
Proposed Extension of Kiukiang-Nanchang Ry. A Brtish Consular Report staed that shareholders were seeking to extend this line from Nanchang to Kan Hsien (ex Kanchow) .
Ssupingchieh-Chengchiatung Railway The survey had been completed and the the Supt, Mr Wu was conferring with the SMR about its construction.
Work on the Canton-Szechuan-Hankow Railway A discussion on the political and financial difficulties this divided line was facing during its construction of the various sections.
Haiphong-Yunnan Railway Receipts for the first 8 months of the year were just over $2million.
Shantung Railway Estimates for the next financial year.
Menkiang-Linkiang Light Rail Line 17 (out of 27) miles of this privately funded line (蒙江-临江) had been completed between Sanchiatzu and Wangchiatangtzu.

January 1917
The Projected Kwangsi Railway A general description of the province this line would pass through. Four photos and I map.
China's Railways in 1916 Financial returmns for China's railways for the year.

Development of Szechuan A US Consular Report summarising railway development plans in the province.
Proposed Railways in Manchuria A summary of the new lines planned.
Chinese Eastern Line Lacks Cars Several thousands of the railway's cars had gone to Russia and not returned.
Shantung and Tientsin-Pukow Traffic Discussions had resumed on restarting through trains which had stopped after Japan had seized control of the Shantung line.
South Manchuria Railway Estimates for the next financial year.
S. Manchuria Locomotives for Indo-China. Part of an order for locomotives built at Shakako works had been completed.
South Manchuria Railway Total earnings for 1916 reported.

February 1917
Map of China- Showing Existing Government Railways & Proposed Lines - Awarded to Siems-Cary Ry. & Canal Co. to build. Large fold-out map inserted as a Supplement, dated February 1917.
Another American Railway Project Am eight-page report on the proposed railway from Honan into Hupei and Shensi provinces. 8 photos.
Railway Versus Other Transportation in China An editorial comparing railways with China's traditional methods of transport and financing..
The Chinese and the Railway Extract from the "North China daily News" comparing old and new means of transport in Kiangsi.
American Locomotives in China . 20 locomotives ordered from USA had arrived in Wuchang.
Light Railway from Swatow to Changlin A company had been formed to operate this line and road bed preparations had startred.
Kaifeng to Shanghai in 24 hours. It was now possible to make this journey in 24 hours, "putting Kaifeng on the map" according to the "Peking Daily News"

March 1917
Kiangsu Railway Project The British Consul at Naking had reported that little progress had been made with this line.

April 1917
Chronolgy of Chinese Railway Building A list of line actually build as well as those for which loans had been agreed for the period 1863 and 1916.
Ssupingchieh-Chengchiatung Railway Only 3,5 million Yen of the required 5 million had been raised.
South Manchuria Ry. Rolling Stock The 3,200 freight wagons in service were inadequate for the goods being carried.
Chinese Eastern Goods Cars Over 6,000 wagons had failed to returm from Europe.
Szechuan-Hankow Lines A report that 80 li of rails had been laid between Hankow and Tsaitien.
Cost of Wu-Pu Section of the Canton-Hankow Line.The costs of building this line had not yet been revealed by the Board of Communications.
Kiukiang-Wuchang Project. This project had been proposed by a former local official.
Chefoo-Weihsien Railway Building this line was getting closer.
Manchurian Light Railway Scheme. The first section of line, between Kaiyuan and Hsifeng would probably be built first.
Accuses Tientsin-Pukow Railway, accusations had been made by the Japanese press of the railway giving "unauthorized:" freight rebates on groundnut oil shipments.

May 1917
Some Questionable Railway Deals Some Newspapers had made allegations of Corruption against the Minister of Communications. This extended to the supply of locomtives and other equipment.
China's Railways An editorial about co-operation on through ticketing between China and Japan's railway lines.
Minister Hsu Shih-Ying Under Arrest A notice that the Minister of Communications had been arrested on May 3rd. and released on bail.
New Japanese Railway in Manchuria. Transalation of an agreement between China and Japan for the building of the Ssupingchieh-Chengchiatung Railway.

June 1917
Reconnoitering The New American Railway Routes The U.S. Siems-Carey Railway & Canal Co's engineer Mr Murray Sullivan was making a reconnaissance for a railway route between Chuchow and Paoking in Hunan province.. The territory is described & illustrated with 26 photos.
Looking for a Line A futher report of the Siems-Carey Co. searching for a feasible route between Chowliakou and Siangyang (周家口 – 襄阳), a distance of 225 miles.

July 1917
How to Get the Best from China's Railways Ray Hall, the Principal of Peking School of Comerce discusses the failure of downfall of numerous private railway companies in China and the improvments made by Dr C.C Wang's Accounts Commission.
Chefoo-Weihsien Railway Provicial investors still intending to build this line..
Chanchung-Nungan Light Railway A scheme to build this line was progressing.
Ssupingchieh-Chengchiatung Railway Construction work progressing..
Extension of Kirin-Changchun Railway The extension to Yenchi had stalled due to lack of funds.but the government was still keen to promote this.
Shantung Railway Receipts Six-monthly figures.
Shahokou Shops of S.M.Railway The works had many orders from other organizations apart from th SMR.
S. Manchurian Capital Increase Capital was going to be raised by 20 million Yen.
Chinese Eastern Railway to Japan Negotiations between Japan & Russia still continuing about transfer of the Harbin-Kwangchengtu section.
Canton-Hankow Line Reaches Yochow A large iron bridge had been completed on the section Puchi -Yochow.(蒲圻-岳州).

August 1917
A Dozen Days on the Dragon Throne A long article about the attempted coup against the Republican Government by General Chang Hsun (Zhang Xun 张勋) who tried to reinstate the Manchu Imperial system by placing palace-imprisoned ex-emperor Puyi on the Emperor's throne again with himself (Chang) as the Regent. He appointed many senior ministers who accepted their positions, discarding their generally ill-fitting Western frock coats and dragging out their old Imperial robes from moth-ball storage. Among these was renowned Chinese railway engineer Jeme Tien-Yu (Zhan Tianyou 詹天佑) who was appointed President of the Board of Communications. There is photo of the newly- installed Jeme in Imperial Mandarin silk robes. Chang's

coup failed less than two weeks later when his house was stormed by the military and he escaped death by fleeing to the foreign settlement.from where he with his new government resigned.
S.M.R Traffic Returns Figures for the month of June.
Wuchang-Yochow Section Open Services had commenced on 6th July.
Ssupingchieh-Chengchiatung Railway Trials had begun on a five-mile section.
More cars for Manchurian Line Total rolling staock had teached 3,682 cars including freight wagons.

September 1917
Yellow River Bridge to be Rebuilt The Peking-Hankow needed to replace the original “temporary” bridge.
Railway Appointments Tsao Ju-Lin, Minister of Communications and other senior railway officials had been reappointed.
Canton-Hankow Railway Progress A short account of thre previous year’s work and progress.
Nan-Hsun Railway Progress Bridge completions now allowed through services on this line between Kiukiang and Nanchang. (a.k.a “Kiangsi Railway”.
Ning-Hsiang Railway All work had been suspended since August.
America to Buy the Changchun Line A rumour that USA would buy the Russian owned line.
New Kwangtung Railway Plan A company was being formed to build a line between Cheung Muk Tau and Weichow.
Ssupingchieh-Chengchiatung Railway Floods had caused damage, but not as serious as first suspected.
S.M.R and Chosen Lines Linked Chosen lines were be managed by the S.M.R.
Changchun-Kirin Agreement The Loan agreement was to be revised.

October 1917
Canton-Kowloon Line Summary of the Annual Report for the British Section.
Chaochow-Nanchang Project A report that negotiations for building this line were proceeding
Repairing Flood Damage in Honan Reports that trains had started running again after repairs.
Ssupingchieh-Chengchiatung Railway Mr. T Takenaka, formerly of the SMT had been appointed Traffic Manager.

November 1917
Railway Traffic Interrupted. Heavy rains had caused damage to the embankments of the Peking-Hankow railway stopping all traffic.
K.Y. Kwang Appointed Engineer-in-Chief of the northern section of the Tientsin-Pukow Railway.
Returned Chinese Students A list of students who had studied in USA and now returned to China. Many had senior positions on the railways.
Siems-Carey Railway & Canal Company After an enthusiastic reception of the contract to build 2,00 miles of railway in China, the mood was changing with reports circulating of obstructions.
The Kirin-Changchun Railway Loan A loan agreement had been signed for the building of this line.
Chinese Eastern Railway Reports that the unfinished agreement for the Japanese purchase of the line from Russia were to continue.

Ssupingchieh-Chengchiatung Railway Floods had set back the completion date.

December 1917

Some Dangers of Railway Development in China & How to Prepare Against Them Dr C. C Wang's long paper to the government on how to avoid past mistakes in railway management.

Ssupingchieh-Chengchiatung Railway A wooden bridge over the River Liao at Sankiangkou had been completed on 13 November,

Japanese to Extend Shantung Railway Surveys for an extension from Tsinan to Taokaochen had started.

South Manchuria railway Returns Earnings report for September.

Adverisements – Tientsin- Pukow Line, Peking-Hankow Line, American car & Foundary Co., The Cheng-Tai Railway, Peking-Kalgan Railway, Chosen Railways, South Manchuria Railway, Kirin-Changchun Line-Timetable, The Pienlo Railway -Timetable, The Tao-Ching Railway. The Peking-Mukden Line & Canton-Kowloon Railway

上海英界仁路第五號記

THE FAR EASTERN REVIEW

Engineering
Finance ❋ Commerce

遠東時報

Vol. XIII., No. 1. ❋ SHANGHAI—MANILA ❋ June, 1916.

SECRETARY SEP 11 1916

CHIEF CLERK SEP 11 1916

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The Passing of Yuan Shih-kai

China's New President

The White Peril

Philippine Hemp Improvement

Restoration of Republicanism in China

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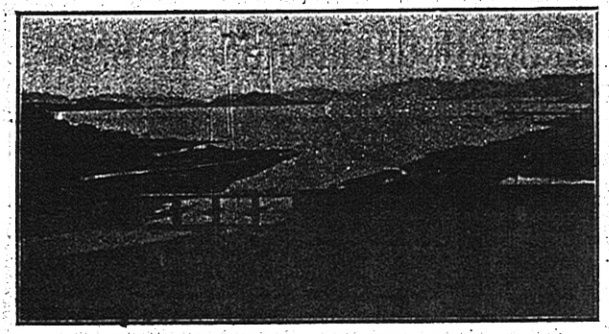
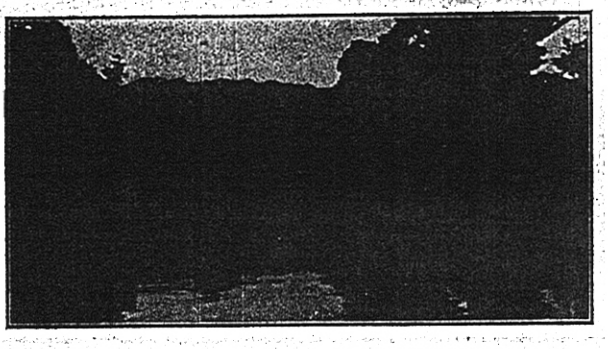


CANTON-KOWLOON RAILWAY—APPROACH TO KOWLOON

VIEWS ON THE CHINESE SECTION, 89 MILES. (Chinese Government Railways)

TAI SHA TAN STATION, CANTON

QUICKEST AND CHEAPEST ROUTE BETWEEN CANTON AND HONGKONG THROUGH VARIED AND BEAUTIFUL SCENERY



CANTON-KOWLOON RAILWAY—SCENE ALONG ROUTE

NEAR LE LOONG, CANTON-KOWLOON RAILW

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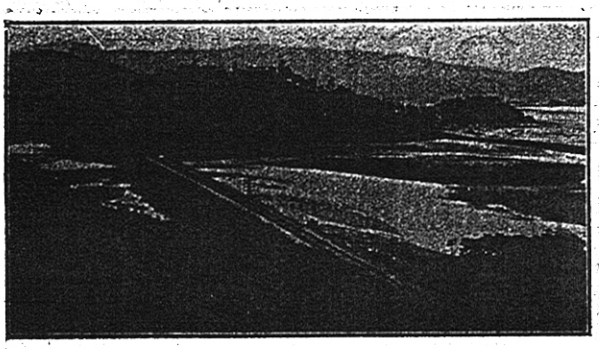
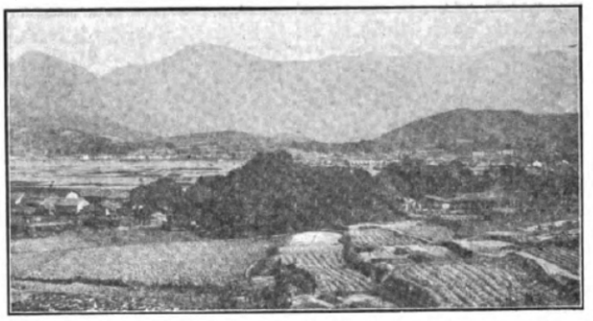
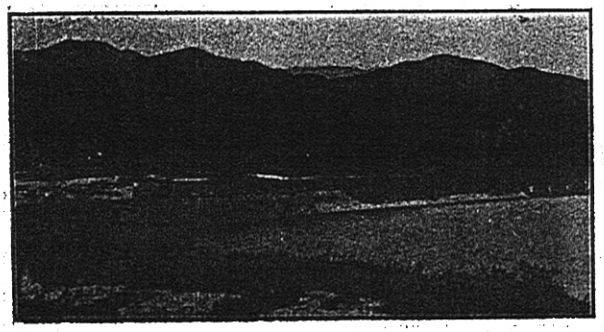


CANTON-KOWLOON RAILWAY—CROSSING TIDE FLATS

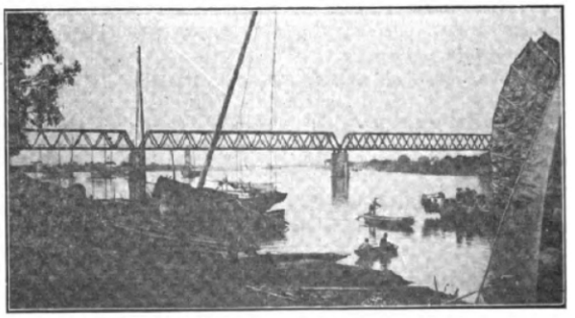


VILLAGES, CANTON-KOWLOON RAILWAY

4½ HOURS BETWEEN UP AND DOWN TRAINS FOR BUSINESS MEN OR TOURISTS AT CANTON OR HONGKONG



CANTON-KOWLOON RAILWAY—EMBANKMENT APPROACH TO BRIDGE



EAST RIVER BRIDGE, CANTON-KOWLOON RAILWAY

TIME TABLE

Leave Hongkong (Kowloon) 8.05 a.m., 9.30,* 11.15 a.m., 11.55*a.m. & *3.15 p.m.
Arrive Canton (Tai Sha Tan) 11.45 a.m. 5.20 p.m. 3.50 p.m. 7.15 p.m.

Leave Canton (Tai Sha Tan) 7.25,* 8.35 a.m. 12.30* noon & 3.20* p.m.
Arrive Hongkong (Kowloon) 11.00 a.m. 4.35 p.m. 4.00 p.m. 6.55 p.m.

Special terms and special trains for large tourist parties. For further particulars see advertisements or apply to

*Express

The Manager (British Section) Kowloon, HONGKONG.

The Administration (Chinese Section) CANTON.

THE FAR EASTERN REVIEW

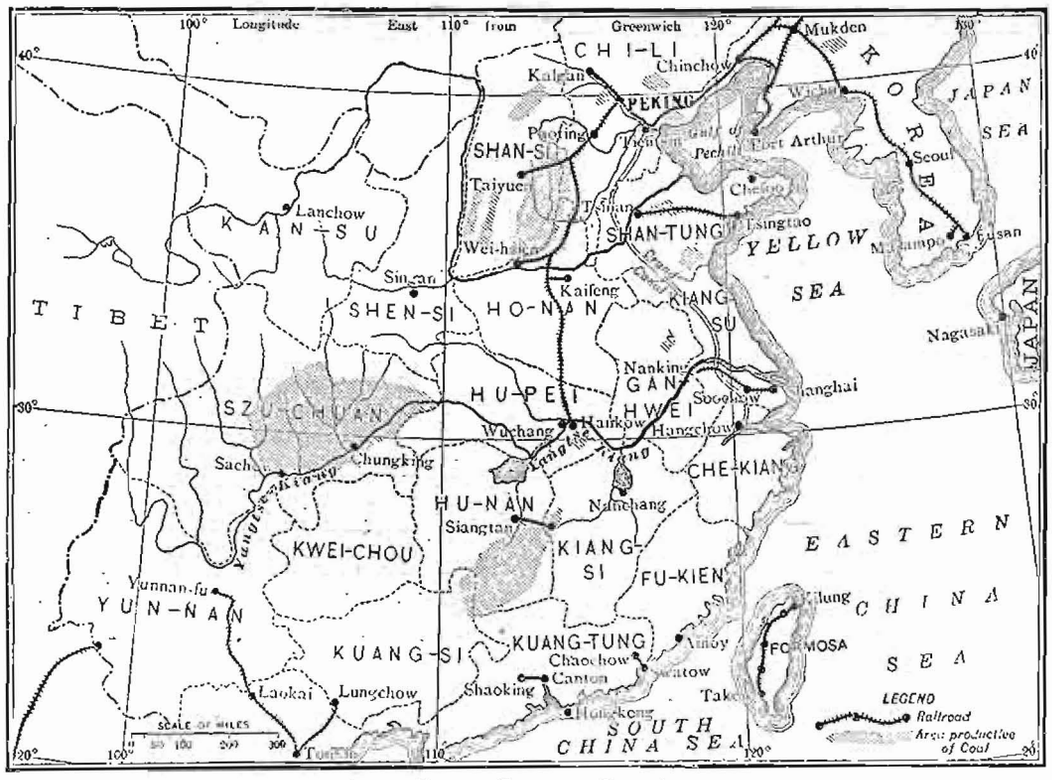
COMMERCE :-: ENGINEERING :-: FINANCE

VOL. XIII. SHANGHAI, JUNE, 1916 No. 1

THE COAL RESOURCES OF CHINA

[BY V. K. TING,* DIRECTOR OF THE GEOLOGICAL SURVEY, CHINA.]

Since the time of Richthofen, the celebrated geologist and traveller who explored the greater part of Eastern Asia in 1868-1872, China has been reputed to be one of the richest countries in coal. Nor is this reputation ill-founded, for although some of the earlier estimates were undoubtedly too high, she is admitted to-day to have the largest coal reserve in Asia and with the exception of the United States and possibly Canada, also the largest in the whole world. Of course owing to the lack of accurate surveys it is impossible yet to give the exact tonnage of her reserve, but foreign explorers and engineers and recently the members of The Geological Survey of China have done a sufficient amount of reconnaissance work to enable us to make rough estimates of the probable resources.



MAP OF CHINA, SHOWING COAL AREAS

Geographical Distribution

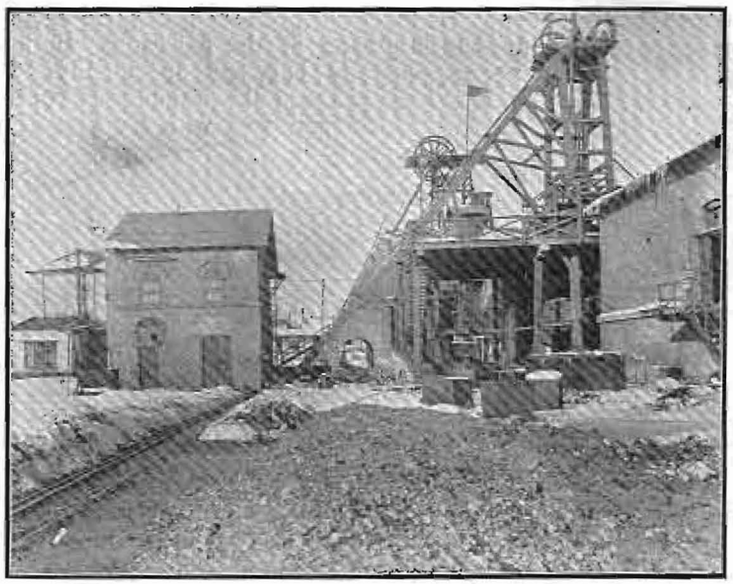
Coal is very widely distributed throughout China; there is not a single province in which coal is not known to occur, but some are much more favoured than others. The north-eastern provinces, Shansi, Chihli, Shantung and Honan are undoubtedly most important. Shansi is in fact the richest of all. Inner Mongolia as well as Manchuria are fairly well supplied with coal though in the former case it is less known. The north-western provinces are much poorer, though Kansu and Turkestan contain numerous coal fields. The same may be said of the Yangtze Valley and the south-eastern coastal region where the possibility of finding coal is limited by unfavorable geological conditions. The provinces of Hunan and Kiangsi are the exceptions, especially Hunan, which is the Shansi of southern China. The western and south-western provinces are known to possess coal in very numerous localities, but on the whole they are much less important as the coal seams are usually much thinner and the fields are broken up into small patches.

Geological Occurrence

The most important coal deposits are of Permean or Upper Carboniferous age. The great coal basins now worked on a large scale in northern Chihli, Shansi, Shantung and Honan all belong to this formation. They are underlaid by the great Ordovician limestone below and covered by sandstone of continental origin. This is, however, by no means the only coal that occurs in China. The fine coal field of Fushun in Manchuria, with its extraordinary

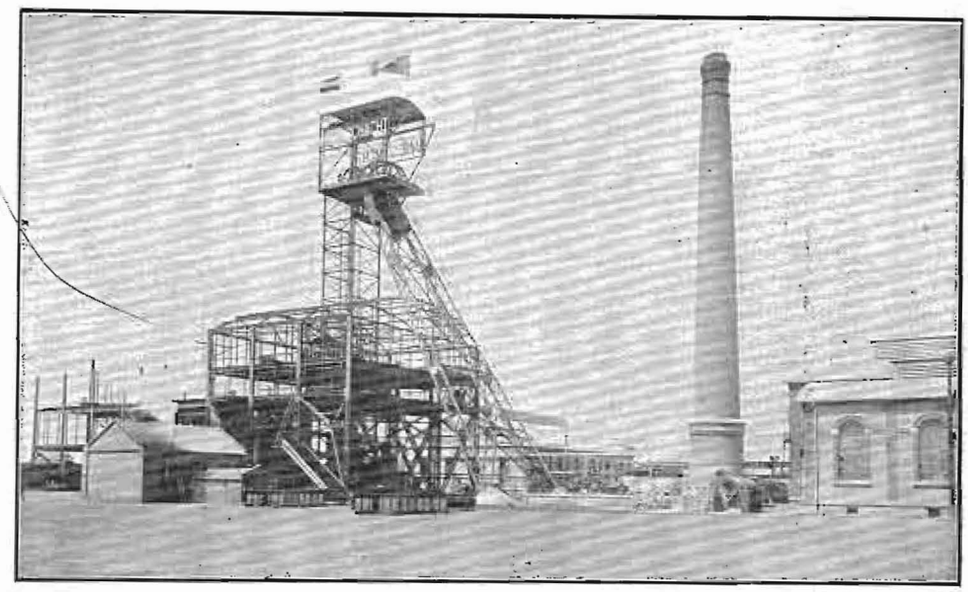
[* An informative article on the Tungchwanfu, Yunnan, Copper Mines, was written by Mr. V. K. Ting and published in the FAR EASTERN REVIEW in November, 1915.]

VIEW OF THE HUNGSHAN MINE



TANGSHAN MINE—HEADFRAME OF NO. 2 AND 3 SHAFTS

to be erroneous—a country much complicated by deep folding and faulting was supposed by him to be a simple plateau, hence his estimate must be many times too large. On the other hand those for Chekiang, Fukien, Kiangsi, Anhui and Mongolia are all too small. In the case of the first two provinces, Inouye's figures prove the point. The recent work of Dr. Wong, a member of The Chinese Geological Survey, shows that in Kiangsi the coal field of Pingsiang stretches itself in the E. E. N. direction through the district of Funcheng and Loping to Fouliang in the northeast. This immense belt alone would give a reserve equal to that given by Drake for the whole province, and other smaller coal fields are also known in Kiangsi. The same worker shows also that in western Inner Mongolia the Jurassic coal amounts to over two billion tons. Both Inouye and Drake gave very incomplete accounts of Anhui. The numerous fields in northern Anhui, namely, Shusung, Taihu, Shuchow and Hweiyuan, were apparently unknown to them, and the latter's description of southern Anhui, taken chiefly from Ishii's report, is very inaccurate and misleading. Again no mention was made of Chinese Turkestan which contains at least as much coal as Kansu, its eastern neighbor.

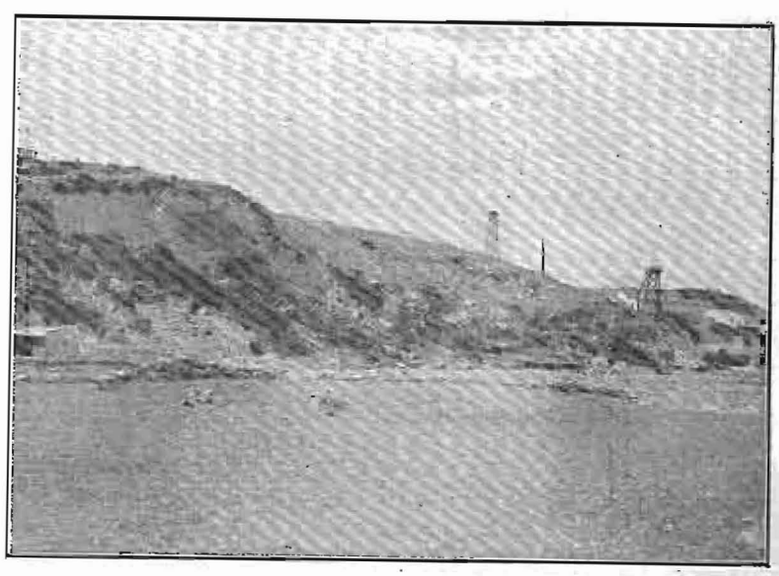


SHANTUNG MINING COMPANY SHAFT

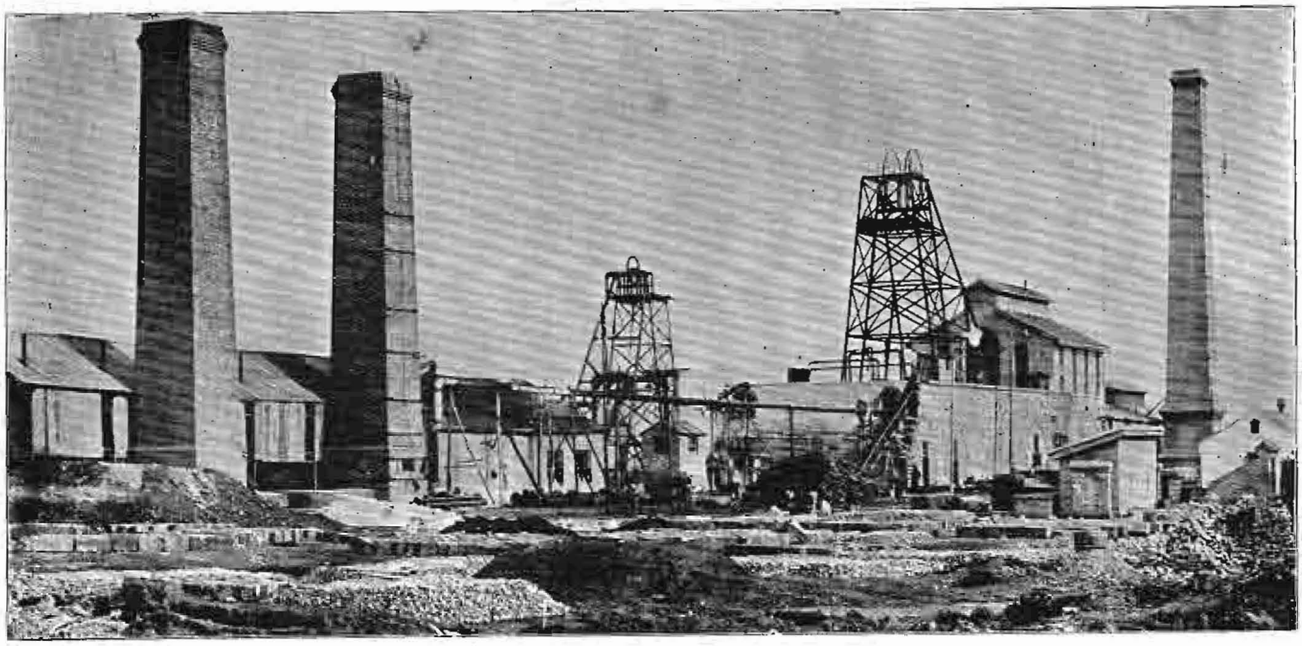
On the whole, however, Drake's total figure is certainly of the right order of magnitude though the figures for individual provinces are very uncertain. It is in fact futile to try to arrive at more exact conclusions as sufficient data do not yet exist, but it is correct to say that as far as present knowledge goes 100,000,000,000 metric tons is a fair minimum figure, but the real reserve is probably ten times as large. Taking the total production for the whole world to be roughly one billion tons per year, then China is probably capable of supplying the whole world with coal at the present rate for the next 1,000 years.

Quality

Both bituminous coal and anthracite occur in China, but the latter is probably more extensive, as the coal in Shansi and Hunan, the two richest provinces, is largely anthracite. Anthracite has been in fact more readily used by the Chinese because it can be burnt in open stoves without chimneys. The bituminous variety has in recent years acquired increasing importance, as the coal now worked on a large scale is mostly bituminous; in fact out of about twenty machine-worked mines, only three are mining anthracite, i.e., the Peking Syndicate in Honan, the Poaching Mining Co. in Shansi and the Tungshin Company in Mentakou, west of Peking. Though



MENTAKOU COAL MINE, NEAR PEKING



JAMISEN COLLIERY ON TAO-CHING RAILWAY

thickness of 120 ft., is of tertiary age and is now worked by the South Manchuria Railway Company, producing about 5,000 tons daily. The famous coal fields of Tatungfu in northern Shansi and many of the smaller coal basins in Chihli and Mongolia, as well as the coal in the so-called "red basin" of Szechuan, are Jurassic. The best coal in Yunnan and Kweichou is Trassic, whilst the lignite found in the dried-up lake regions in the two above-named provinces may prove to be younger than Tertiary. It is safe to say, however, that the Permo-carboniferous coal is by far the most important, for it includes not only the greater reserves of northern China, but also, those in Hunan and Kiangsi, the only two provinces south of the Yangtze that possess coal fields of any importance.

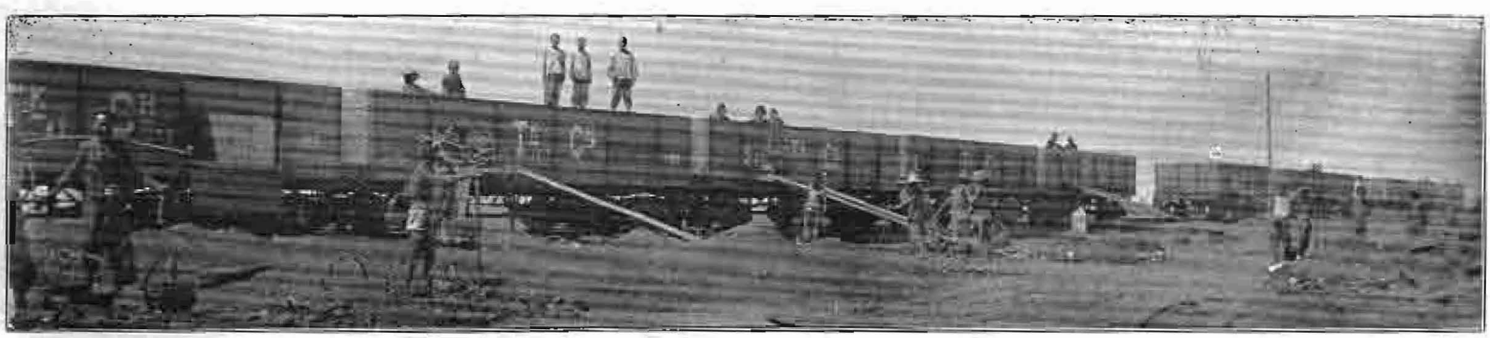
Quantity

The most recent attempts to estimate the tonnage were made by Inouye and Drake in the "Coal Resource of the World." The following are the figures arrived at by the two authors:—

	By Drake	By Inouye (Probable reserve)
Mongolia	1,200,000,000	metric tons —
Chihli	22,668,000,000	3,080,000,000
Shantung	7,083,000,000	650,000,000
Shansi	714,340,000,000	1,200,000,000
Shensi	1,050,000,900	—
Kansu	5,129,000,000	—
Honan	9,275,000,000	200,000,000
Kiangsu	10,000,000	—
Anhui	187,000,000	—
Hupei	117,000,000	—
Chekiang	24,700,000	120,000,000
Fukien	25,000,000	80,000,000
Kiangsi	3,395,000,000	1,435,000,000
Kuantung	1,009,000,000	—
Kuangsi	500,000,000	—
Hunan	90,000,000,000	17,000,000,000
Szechuan	80,000,000,000	15,000,000,000
Kweichow	30,000,000,000	—
Yunnan	300,000,000,000	—
Manchuria	—	1,208,000,000
Total	996,612,700,000	39,973,000,000 metric tons

The apparent discrepancy is explained by the fact that Drake attempted to make a complete estimate by summing up all known data, whilst Inouye gave practically all that is known to the Japanese Geological Survey: hence his estimates for Fukien and Chekiang, the two provinces best known to the Japanese, are higher than those given by Drake, although in all other cases his figures are much lower. The term "probable reserve" used by Inuoye is somewhat misleading, as his figures suggest totally wrong ideas of the relative importance of the different provinces. How can a province like Kiangsi, for example, be made to possess a greater amount of "probable reserve" than Shansi? It is therefore necessary to remember that Inouye's extremely interesting article is, properly speaking, a summary of Japanese knowledge of Chinese coal fields and can in no sense be regarded as an estimate of the total probable reserve.

Drake's attempt is much nearer to the truth though much of it is guess work. He himself remarked that the figures for Shansi, Yunnan and Kweichow might be too large. This is certainly the case. His source of information was chiefly Richthofen and Leclere. The former perhaps somewhat overestimated the coal resource of Shansi as he certainly did in the case of iron, and Leclere's work on Yunnan and Kweichow proved



LOADING A COAL TRAIN ON TAO-CHING RAILWAY

the character of the coal is independent of its geological age, the proportion of anthracite is greater in the paleozoic. Both of the two varieties are generally excellent in quality. The anthracite of Shansi and Hunan and the bituminous coal of Chihli, Shantung and Kiangsi compare well with the best of its kind in other parts of the world.

Production

According to the statistics compiled by the Chinese Geological Survey the production of coal of all kinds in 1913 was about fifteen million metric tons. They are distributed in the various provinces as follows:

	metric tons.
Chihli	2,701,000
Shansi	2,868,000
Hunan	1,200,000
Honan	1,403,000
Shantung	1,120,000
Szechuan	1,002,000
Kiangsi	949,000
Fentien	1,805,000
Ki in	44,000
Helungkiang	230,000
Yunnan	86,000
Kansu	30,000
Turkestan	600,000
Kweichou	100,000
Shensi	100,000
Anhui	10,000
Kwantung	12,000
Kwangsi	10,000
Kiangsu	25,000
Chekiang	10,000
Hupeh	100,000
Fukien	50,000
Total	14,515,000

These figures are, of course, not exact though great pains have been taken in compiling them, for only the modern mines can furnish anything like exact statistics and these produce only about one half of the total amount. The rest is produced by tens of thousands of small shafts scattered all over the country. Their production has been estimated according to the number of shafts and miners. Many of them must have escaped notice and the above figures are really a minimum estimate. It is to be remarked that the total figure agrees tolerably well with that given by Inouye who thought it to be between fifteen and twenty million tons.

Future Development

From the above statement it is clear that the consumption of coal in China is surprisingly small when compared with her population. It is simply caused by the lack of transport facilities. Coal is a commodity which travels very far only in countries well supplied with railways, in China where the price is often doubled by a day's journey, coal for household purposes is an article of luxury except in those fortunate places situated very close to the mine or connected with it by modern means of communication. Even a casual study of the history of mining development in China shows at once that all the big coal mines with the single exception of Pinghsiang, which supplies the Hanyang Iron Works with coke, are closely connected with railway enterprise. The Kailan and the Fuchun mines could never have existed without the Tientsin-Mukden and the South Manchuria Railways. Shansi anthracite, entirely unknown a few years ago, now finds a ready market in the Yangtse Valley. As time goes on the projected railways are bound to be built and what impetus they will give to coal mining! For example, if the Haichow (in Kiangsu)—Langchow (in Kansu) railway is completed, it will not only open up the Southern Honan coal fields, but the Mesozoic basins of Shensi, and Kansu will also be tapped.

The rapidity of development will be different for different kinds of coal. Anthracite is to some extent preferred by the Chinese for household purposes, but it must largely depend on local consumption. The great majority of the populous cities in the Yangtze Valley are still depending on straw and dry grass for cooking and are almost totally without means of heating in the winter though the temperature often descends considerably below zero. Shansi and Hunan anthracite have in recent years been making their way into these regions, but when better business methods are taken to educate the population at large, the consumption can easily be doubled or even trebled, and we need not seriously believe the stories of the anthracite merchants in Shanghai who are ever ready to insist that the Yangtze cities have got as much anthracite as they can possibly consume.

For bituminous coal there is an enormous market—1,500,000 tons of it are imported every year from foreign countries, especially Japan, because not only do the numerous steamers demand a great supply, but the newly established factories of oil, cotton and silk increase it still more. Again Hongkong, the biggest shipping centre in the Far East, consumes another million. Part of it comes from Australia but Japanese coal—known as Miike—is most important. It has the disadvantage of being rather sulphurous. The Chinese coal is on the average better in this respect and successful competition is purely a matter of organization. Another potential market for coking coal is the smelting furnace. Nearly 100,000,000 tons of pure high-grade iron ore are known to exist on the very bank of the Yangtze River and they are bound to be developed in the near future and that will largely increase the demand for bituminous coal.

In this respect it is important to consider the waterways especially the Yangtze River. It is something of a surprise that many of the coal fields so near to the mighty river have not been developed at all. No doubt the geological conditions here are less favorable than in the north; folding and faulting often deteriorated the quality or diminished the quantity. But some fields of considerable size and good quality are so excellently situated geographically that it is a wonder that they have not been chosen in preference. The reason is perhaps because they are mostly not in active working by Chinese miners as the coal above water level had long since been taken out. They are therefore more difficult to prospect and less impressive to the unscientific than the northern coal fields which, owing to the demand caused by climatic necessity, and to the relatively modern development, were still actively mined before the advent of European methods. Again in the time of the Manchu dynasty legitimate mining was greatly hindered by official obstruction and the big mines in northern China were either opened up directly in connection with railways or acquired by questionable methods of concession. The mining law of 1914 is certainly incomparably better than any that was framed in the Manchu dynasty, though foreign capital is somewhat put at a disadvantage. The Chinese Government is fully aware of the fact and a revision is actually under consideration:* When a more generous and simpler mining law comes into existence, there is nothing to prevent European capitalists investing their money in Chinese coal mines, as cheap labour and ready markets will give them considerably higher profits than the average coal mines in Europe or America, as is clearly shown by the best managed mines now existing in northern China.

JAPANESE SPECIE HOLDINGS

The amount of Japanese specie both at home and abroad has now reached 600,000,000 yen, of which 190,000,000 yen is owned by the Government and 410,000,000 yen by the Bank of Japan. Of the amount, 170,000,000 yen is at home, 300,000,000 yen in Europe and 130,000,000 yen in the United States. The amount at home is owned by the Bank of Japan entirely and of the amount in the United States, about 100,000,000 yen is possessed by the Government.

[* See article "Proposed Remodelled Mining Laws for China" in May issue.]

THE ADMINISTRATION OF CHINESE GOVERNMENT RAILWAYS

[By Dr. Ching-chun Wang]

During the first few decades of railway history, the chief interest which the public took in the new means of transportation was its mechanical and engineering novelties. It gradually became evident, however, that the non-physical problems were even of greater importance. With the unforeseen development of railways in the different countries, and the consequent revolution in the social, economic and political life of mankind, the question of administration and control has become as important as it is complex. From the early fifties, the problem of railway administration has been under constant consideration. The different systems adopted by different countries and the different theories advanced by different schools of thought, together with the fact that no system yet evolved escapes denunciation by some, often considerable body of opinion, while its defects are, at the same time, obvious to its strongest advocates, show clearly enough that no sort of finality has been reached. This together with the fact that railways in their bearing upon political power and social and economical development are the most important industrial undertakings, the world over, and that, as it is said,[1] "the politics of China are railway politics" may perhaps afford a sufficient excuse for writing this paper on the administration of the Chinese government railways during the age when political questions occupy the attention of all classes of society.

Dr. C. C. Wang, Chairman of the Commission on the Unification of Railway Accounts

Railway administration in its broad sense embraces every phase of the railway problem. From the broad question of national policy down throughout location and construction of the line to the fixing of rates, running of trains or handling of traffic,—all constitute certain phases of railway administration. It involves the task not only of analysing what constitutes the work but also how the work is or should be done. The object of this paper, however, is rather to show the organization by which the administrative work is accomplished than to go into the details of the work; the few facts of the latter which we have actually covered have been those which have to be kept in mind before the nature and effect of the organization can be properly understood.

The Development of the Government Railways

Since the introduction of railways in 1876, China's railway policy has undergone a number of changes. At first it was a general policy of opposition, as shown by the fate of the Shanghai-Woosung Railway.[2] The ignorance regarding the new scheme of transportation, the general prejudice against foreign innovations, the fear of foreign influences and the deep-rooted superstitions together with the untactful behavior and irregular methods used by some of the foreign promoters,—all these combined to prevent the introduction of the new means of transportation. Moreover, the apathy against railways was not limited to any one class but extended to all classes of the nation. The railway policy of China then, if any policy existed, was that of exclusion.

Beginning about 1879 a number of the enlightened officials began to realize the usefulness of railways. Efforts were made even at considerable personal risks to introduce railways into the country; but the Court above and the people below were as obstinate as before. In spite of apparently insurmountable difficulties, however, the ingenious and persistent efforts of these enlightened officials gradually removed the barriers. After the Boxer uprising, the Court became too busily occupied with other questions to maintain its opposition against railways. So for about eight years, the Government adopted what may be called a *laisser faire* policy.

By 1907, the Peking-Mukden, the Peking-Hankow, the Peking-Kalgan, the Tientsin-Pukow, the Shanghai-Nanking, the Kirin-Changchun and the Chengtai Lines had been opened to traffic. The enormous returns made by a number of these lines at once made a deep impression upon the people. They began to realize the possibilities of railways as investments. So superstition, formidable as it was, gradually gave way in the face of the increasing usefulness and earning power of railways, and in its place a railway fever set in. The "localization" movement was started, with the slogan that each Province should race against all the rest in building all the railways within its boundaries. Many railway companies were organized. Several Provincial Governments also jumped into the whirlpool. Numerous schemes were embarked upon. Liberal rights were obtained from the Government. A considerable amount of money was raised, and a number of lines put under construction. From all appearances, there was a general enthusiasm for railway building. But the lack of practical experience in this new enterprise more than counter-balanced the force of enthusiasm, in the midst and in spite of which, actual railroading did not go very far. In order to prevent these schemes from becoming complete failures and to extend the then favorite policy of centralization, which had been adopted by the young Manchu princes a few years before, the program of railway nationalization was embarked upon. This measure met with immediate and wide-spread opposition, which led to the Revolution of 1911 and resulted in the overthrow of the Manchu Dynasty. As if heavenly sent for the special purpose of overthrowing the Manchus, the "localization"

1. Reinsch, World Politics, p. 114.

2. After overcoming all sorts of obstacles, the first rail of this narrow gauge line was laid in 1876, exactly 50 years after the 'rocket" made its debut in England. But later opposition became so strong that it had to be repurchased by the Government and the rails, etc., torn up and conveyed from the mainland to Formosa to rust.

movement immediately subsided with the dissolution of the Dynasty.

The spark which started the conflagration, the nationalization policy, however, outlived all the turmoils. This policy has since been quietly carried out until now practically all the provincial concessions are taken back. Side by side with the nationalization program, the policy of making a system of State railways has been definitely adopted. A system of trunk lines which should be constructed and operated by the Government has been carefully mapped out. Thus the policy of creating a system of national railways began with the downfall of the Manchu Dynasty and consolidated itself during the Republic.

Some Statistical Features

By the end of 1915, there were in all 8,342 kilometres of railway under operation in the country. This kilometrage, from the point of view of administration and control, may be divided into three general classes. Of these the most important is the system of government railways, which comprises fifteen different lines with a total of 5,702 kilometres, thus equalling to 68.4% of the total kilometrage in the country. With the single exception of the Chengtai Line, which has 324 kilometres of narrow gauge, all the rest are standard gauge railways. The second class embraces 2,399 kilometres of "concessioned" lines, such as the Chinese Eastern, the South-Manchuria and the Chiaochou-Tsinan Lines; while the last class consists of 242 kilometres of private lines which are owned and operated by private Chinese companies.

This system of government railways has cost the Chinese Government $398,221,176.00, being about $73,783 per kilometre of line. If the Chinese people are considered as the owners, it would mean that it has cost every Chinese about a dollar to build the railways now in operation.

There are 627 locomotives of all classes which were bought from more than five different countries. A total of 823 passenger cars and 10,418 goods wagons were used in carrying the 26,036,152 passengers and 14,580,264 tons of freight in 1915. A gross revenue of 56.1 million dollars was earned, while 48 millions was spent for doing the business and paying interest on the capital, leaving $8,100,000 to the Government as a net profit during the same period. In addition to the lines under operation, there are now about ten thousand kilometres of line which are either under construction or definitely projected. These trunk lines constitute the system of government railways. The operation of this kilometrage of completed lines, the financing and building of the large trunk lines already projected, the plans for furnishing the country with numerous other lines that are yet not definitely mapped out as well as the supervision of private lines,—all these important tasks are entrusted in the central railway administration of the Government, the consideration of which naturally falls under three heads:—

I. The Central Administration.
II. The system of local Directorates.
III. Other administrative organizations.

This paper will be devoted to the discussion of the Central Administration.

The Central Administration

Broadly speaking there are two kinds of government railway administration. One has been described as voluntary, as a result of direct policy, the other, as involuntary, assumed because it seems the best way out of an existing difficulty. The Prussian State railways furnish a good example of successful voluntary government administration, while the systems of India and Italy stand as good instances of reluctant state control. Railway administration in China, however, furnishes a third kind of administration, which not only combines certain features of both the voluntary and the reluctant forms of organization, as has been shown briefly, but also contains a third feature, namely, the part which has to do with the foreign loan syndicate.

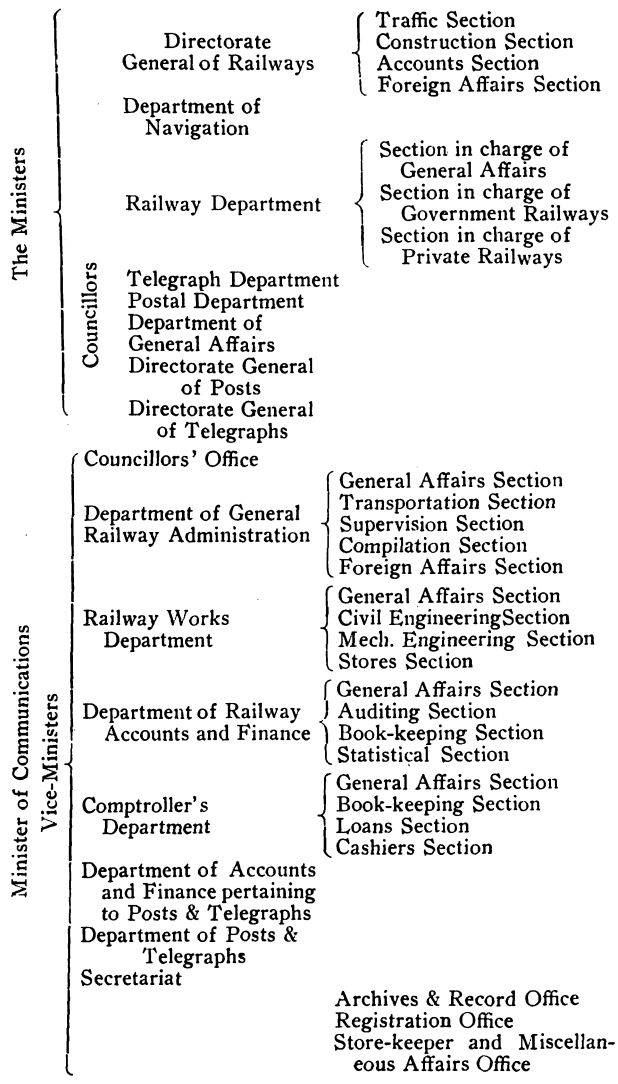
Different from most other countries, railway administration in China, at first, was considered as a diplomatic affair instead of being taken as a question of industrial development. Thus during the first thirty-five years of China's railway history not only questions of general policy but also matters of finance, construction, management as well as all other details of administration were entrusted to the Tsungli Yamen, the then office of foreign affairs. In the early days, when railways were regarded as a purely foreign institution, which involved more international politics than actual railroading, and when those officials in charge of foreign affairs undoubtedly had the first chance to acquire knowledge about railways before others, it is easy to understand why the administration of railways was put in charge of the Foreign Office. But since railways began to extend, the questions which arose in connection with their administration became of a very technical and complicated nature, it became impracticable to require such questions to be submitted to, and decided by diplomatic officers, very able men though most of the diplomatic officers were, who were principally concerned with politics and who could not consequently be expected to understand, or to have the time to examine into, intricate technical and administrative questions which, to the experts themselves, are full of difficulty. Here perhaps may be found one reason why railways have had such a "diplomatic" career in China and why some of the old railway agreements are difficult to understand and hardly workable according to business principles.

The inadequacy of managing railways in such a way became more and more apparent as railways grew. So in 1903 the administration of railways was transferred from the Tsungli Yamen to the Board of Commerce. This undoubtedly was a forward step, indicating the realization of the fact that railways are more of a commercial rather than a diplomatic nature. But as time went on and railway lines multiplied, this organization was again found inadequate. So in 1906 the Yu-Chuan Pu, or Board of Communication and Posts, was created to assume administrative control over all the railway, postal, telegraph and navigation affairs of the country.

As there was little precedent to follow for the establishment of such a new Board to deal with industrial affairs, considerable time was taken in finding out the best form of organization that would suit the situation. The diagram on the next page gives a sketch of the organization finally adopted. One Minister and two Vice-Ministers were placed at the head of the Board. Five departments were entrusted with the executive work, of which one had to do with railways. In addition to these departments, there were three independent directorate-generals in charge of the administrative work of the telegraphs, posts and railways separately.

It may be seen that two separate organizations were provided for the administration of railways, the Railway Department and the Directorate-General of Railways. The former, being a regular part of the ministerial organization, had charge of the affairs pertaining to the administration of lines built with Government funds and the supervision of private lines, besides performing purely administrative functions of the Ministry concerning railways; while the Directorate-General constituted the administrative head office of all the railways built with foreign loans. It may be seen that the diplomatic features of railway administration were still present, as shown by the existence of the Foreign Affairs Section of the Directorate-General of Railways. As the line between the functions of the Directorate-General and the Railway Department was not clearly drawn, considerable friction seems to have existed at times.

In the first year of the Republic, in conjunction with the wholesale reorganization of the entire administrative system of the Government, the Board of Communication and Posts was also reorganized and its name was changed into the Ministry of Communications. Since then several important alterations have been made; the last one took place in August, 1914, by Presidential Mandate. According to the system as adopted in 1912 and modified in 1914, the Minister is the executive head of the Chinese Government Railway Administration and is alone responsible to the Chief Executive. General administrative control over the management of all the Government railways, the supervisory oversight of private lines, the projection, finance and construction of new lines and the transactions with the loan syndicates,—these and a multitude of other matters constitute the duty of the Minister. All special tariffs and through rates



are subject to his assent. All new works and additions and betterments to the properties must be approved by him before starting, and subject to his inspection after completion. While keeping integrity and autonomy of the finances of the different lines, all the financial transactions, accounting records and statistical reports are subject to a careful examination and control. In addition, the Ministry also acts as the transportation agent of the Ministry of War. So whenever troops are to be moved or military stores to be transported, the Ministry of Communications will become busier than ever in keeping one ear to the telephone leading to the War Office and the other ear to that leading to the head offices of the different railways, and this continuous performance goes on very often twenty-four hours in a day. These are some of the important works of the Ministry of Communications. Thus the authority exercised by the Ministry is both regulative and administrative.

For the purpose of carrying on the work as outlined above, the organization as shown in the chart on page 76 was adopted in 1914. At the head of the system stands the Minister of Communications,[1] with two Vice-Ministers as immediate assistants and a staff divided into six departments and five independent offices. According to this organization, the work which was done by the Railway Department and Directorate General of Railways during the Manchu Dynasty are taken up by the three departments which are in charge respectively of general administration, engineering works, finance and accounts. At the head of each department there is a director or chief, who is directly appointed by the Chief Executive and is responsible to the Ministers for the work of his department. Then the departments are again divided into sections, at the head of each of which is a sectional chief who is usually an official of the recommended class and is immediately responsible to his department director.

The principal idea underlying this organization is to divide the administrative work in such a way as to get the benefit of the division of labor and, at the same time, to encourage the management of railways on a business basis. It is evident that an expert in rate making can hardly be expected to be versed in accounts, and that a good accountant may often know little about engineering and *vice versa*. Another idea is to establish a system of mutual checking. From the chart, it may be seen that the functions of spending money, keeping money and accounting for the money are put in the hands of separated departments. Experience seems to show that this system is very wholesome.

To insure smooth working, detailed regulations are adopted, defining the functions of each department as well as the duties of each section. The principal duties of the Department of General Administration consist of the control of the promotion and punishment of the railway staff, the settlement of all questions pertaining to rates and tariffs, the movement of trains, traffic problems and other works of a general administrative character. It looks after the operating and business side of the railways.

The supervision of private lines is also done by this department. Private railways in China at the present time are few and of minor importance, the longest being that of the Canton Railway Company with 210 kilometres. But there are bound to be more private lines in the future, for the proper development and control of which measures have already been taken.

The names of the sections of the Engineering Department illustrate fairly well the functions of the department. All engineering and mechanical questions which need the approval of the Minister are examined and settled by this department. Through this department the Ministry is informed of the engineering progress of all new lines under construction and that of the new works and extensions undertaken by the operating roads. Plans for all engineering and mechanical works, which require the sanction of the Minister, are examined here from an engineering point of view. Parties of engineers are sent out during most parts of the year to survey the projected lines or to conduct reconnoissance for the selection of better routes or the location of new lines. When a railroad or any section of it is finished, it must be inspected by deputies of this department before opening to traffic.

The Department of Railway Finance and Accounts, as its name indicates, has charge of all the financial and accounting questions, such as the control of the railway budget, the management of the loan services, the settlement of all questions pertaining to railway loan agreements, the transfer of funds both among the railways and the Ministry, the compilation of statistics, the accounting for all the moneys earned and spent by the railways both for capital and operating purposes, as well as all other questions pertaining to what is known as the financial administration of railways. The most important work, which has great possibilities, perhaps is the system of financial control which is gradually being exercised through the railway budget, the series of monthly and annual reports which show the progress and results of the administration of the budget and the recently instituted system of examiners of accounts who examine not only the reports and returns that are sent in but go to the railways to test, on the spot, the figures that are reported. This department has close relation with the Comptroller's Department, as it is through the latter that money is actually handled and in conjunction with the latter the finances are managed, while the former keeps the accounts.

1. The following have served as Ministers since the creation of the Board: Their Excellencies Chang Po-hsi, Tsen Chun-hsuan, Hsu Shih-chang, Chen Pi, Tang Shao-yi, Sheng Hsuan-hsai, Alfred S. K. Sze, Chu Chi-chien, Chow Tsz-chi, and Liang Tun-yen.

This is a new department, and is perhaps one of the most busy departments of the Ministry. It may be asked why should the work which required only a section before now keep a whole department with four sections busy? The answer is quite simple; it is that accounts and statistics, whose effects are less spectacular than engineering and whose results less apparent than operation, have received little attention until recently. Very few Chinese knew anything about these matters and consequently very little was done. In fact, the railways were left entirely to themselves in the matter of accounts and statistics. As to finance, it seems what was then known by it was largely a question of cash. Each railway kept its own accounts and statistics in its own way and changed its methods as it saw fit. What the Board wanted, the railways could not supply; what the railways supplied, the Board could not use. In short there was a great lack of sympathy and proper understanding between the central and local administrative offices. Under such circumstances, effective control over the finance and management of the various railways was out of question. It was the appointment of the Commission on the Unification of Railway Accounts and Statistics by Minister Chu Chi-chien and the creation of a special department to take charge of the administration of railway finance and accounts by Minister Liang Tun-yen that began to give importance to this phase of railway administration. These actions of the two Ministers mark a formal recognition of the fact that scientific accounting and a system of standardized records is essential for the success of the policy of administrative control over industrial enterprises which the Government has adopted. Without a clear understanding of accounting principles and a strict adherence to accounting laws, no Government can carry on great industrial enterprises with success. It marks the most significant step, as remarked by several authorities, taken in recent years towards the attainment of efficiency and economy in Government industrial enterprises.

While the functions of the different departments are clearly divided, yet it must be evident that there must be many questions which overlap the dividing lines. In fact, a considerable amount of the work involves all the questions of general administration, engineering and finance. In such cases the departments concerned are held jointly responsible, while one is designated to be in charge. After a thorough examination is made by each department separately, conferences are held for the decision and settlement of such joint cases, over which the Vice-Ministers sometimes preside. Similar meetings are held for the transaction of the business of each department, which the sectional chiefs are required to attend. Such meetings have proved of great value in facilitating matters.

To effect this administrative work between the Ministry and the local directorates, the administration of which will be discussed in another paper, a large amount of correspondence is necessary, besides conferences, frequent inspections, and examinations by special delegates. Thus in 1915 a total number of 12,900 despatches and telegrams were received and 14,348 were sent by the three departments in charge of railway affairs.

The Minister is of the "Specially Appointed" class, and is alone responsible to the highest authority, while the two Vice-Ministers are of the "Directly Appointed" class and are the immediate assistants to the Minister. The departmental chiefs and the councillors are also directly appointed by the Chief Executive, but of a lower grade. Practically all the administration work of the Ministry is done in the departments, while the Councillors Office is in charge of legal and other matters that are of a miscellaneous and isolated nature. While the departments have ample power in the transaction of the every day business, all questions of policy or of importance must be decided by the Ministers. Practically all the despatches are sent out either in the name of the Minister or in that of the Ministry. Those which are sent out in the names of the departments or departmental chiefs are, as a rule, submitted to the Ministers' perusal first. The departments, however, must examine into each case, and furnish all the data and particulars which may be required by the Ministers for deciding each case. Thus the Minister, standing at the head of the whole organization, with the two Vice-Ministers as his eyes and ears and the departmental chiefs as his hands and feet, can always have a general view of the whole situation and is always supplied with the necessary amount of detailed information for deciding questions of policy or importance.

In addition to these regular organizations, there are a number of committees and commissions which are created for the conduct of special works or for the investigation of special questions. Chief among them may be mentioned the Committee supervising the purchase of stores. On account of the supervision which this Committee has exercised, considerable economy in the purchase of stores has been effected. Next may be mentioned the Committee on the Unification of Railway Terms, whose duty it is to standardize all the railway terms which are so widely different with the different railways. This work is more important perhaps, than it appears, in that with the development of through traffic such a standardization of railway nomenclature is a first requirement not only to efficiency but also to safety. Then there is the Standing Committee on the Unification of Railway Accounts and Statistics, which grew out of the Commission bearing the same name. This committee is closely connected with the Department of Railway Accounts and Finance, and is helpful in the proper execution of the uniform system of accounts and statistics which was adopted a year ago. All questions involving the interpretation of the accounting rules or accounting principles are solved through the committee, of which the ministerial officials in charge of accounts and the chief accountants of the important railways are members. This committee helps to make the uniform system of accounts a living institution. In addition there are also a number of other committees on various questions.

A library of literature pertaining to questions of communications is kept for the benefit of the staff. A training school is operated throughout the year for training young men for special services on the railways. The Ministry also maintains a Museum of Communications, which contains about 5,000 models of different engineering and mechanical apparatus and structures of railways and telegraphs. This Museum is open to the public.

Some Improvements

There is no room in this paper to go into the details of the work done or the improvements which have been made during recent years. Suffice it to say that, besides overcoming unprecedented difficulties caused by the abnormal circumstances of recent years and gradually tightening up the strings of control which got rather loose during the latter years of the Tsing Dynasty, persistent efforts have been made in the direction of making a number of fundamental reforms. The consolidation of the system of national railways, the nationalization of the provincial and private lines, the arrangement of through traffic, the improvement of the train service, the betterment of passenger accommodations, the battling against financial and commercial depressions, the standardization of railway materials, the unification of railway accounts and statistics,—these are some of the reforms which have either been accomplished or got under way. Some of these measures are of such a fundamental character that the benefits derived will be cumulative as the railway system spreads from year to year. Another distinct improvement is in the choice of practical men to take the place of "a number of the old literati whose knowledge of railways was confined to writing poetry about them." We lay emphasis on this point, for in any system of organization the most important unit is the individual. Take the departmental chiefs, for instance, every one of them has spent more than ten years in the study and working of railways, while formerly the posts would have been filled by some expectant taotais who might never have had a ride on a railway. The same thing is largely true regarding the other classes of the staff. Take the Department of Railway Accounts and Finance as an instance, fourteen out of a total of fifty odd men are graduates of universities of foreign countries, eight men have had the experience of actual work on railways, while practically all the rest have had a modern education of a fairly good sort. This forms quite a contrast to the fact that a few years ago only three men with a university education were found in the whole Board, and these three were employed only as interpreters. The result of this change is that the Ministry is gradually proving more useful and more effective in exercising a wholesome control over, as well as in working more smoothly into the system of the whole railway organization. The Ministry knows more thoroughly about the Railway Managements, and the latter also understand more about the Ministry.

was organized, trained, and detailed to the principal fiber-producing provinces, for the purpose of educating the producers in the proper methods of cleaning and handling their fiber. The lack of proper machinery for the uniform cleaning of abacá considerably hampered the success of this work, but the attempt proved justifiable and it was continued. This work was supplemented by the publication and distribution of weekly market quotations for the different grades of abacá and maguey, of literature regarding some necessary improvements in methods of cultivation, and by the distribution of samples of the standard grades to the producers.

The success of this campaign was more pronounced and rapid in the maguey-producing provinces, especially in Northern Luzon, and there the quality of the fiber now produced is considered fully equal to that of the Cebú product. In abacá provinces, the campaign met with considerable success in some districts but with little in others. The net results, however, were so valuable that the same work will be continued indefinitely. This work will have to be given increasing attention by the Government, with a view of studying the economic status of the producers and of providing such means as will make them independent of the local town buyers. This, more than anything else, will assist in remedying the economic situation of a large class of producers and will facilitate the work of this division in bringing about the desired improvement in the preparation of fiber for the export trade.

Statistics Now Accurate

One important result is that for the first time in the history of the fiber industry of the Philippine Islands it is now possible to give accurate data relative to fiber production by provinces and by grades. This information will enable all those who have control over the industry to gauge its progress from time to time, and to take such steps as may be deemed advisable and practicable in order that production may be adjusted to meet the best interest of the producers, as well as the actual requirements of the consuming market. These data are also believed to be of considerable value and interest to both local foreign buyers and manufacturers, for they are thus adequately advised of the available supply of fiber of each grade on the market.

The Government fiber inspectors, during the year 1915, inspected, stamped, and approved 1,011,366 bales of abacá and 59,940 bales of retted maguey. In addition to the above, 224 bales of retted sisal and 483 bales of pacol were also inspected and approved, making a grand total of 1,071,983 bales.

The inspectors rejected 35,000 bales of abacá, or about 3 per cent of the total production, on account of improper grading, packing of damp fiber, or because of the presence of weak or damaged fiber. The most of these rejected bales were regraded and rebaled, however, and the balance was disposed of on the local market, on the ground that it was considered undesirable for export.

Since the drought of 1912-13, the production of abacá has been below normal. During 1915 it was slightly in excess of 1914; and, until the final quarter of the year, all indications pointed to a complete recovery of the plantations from the effects of the last drought, and to a production of between 1,100,000 and 1,200,000 bales for 1916. These hopes were not realized, however, as a series of destructive typhoons passed over the provinces of Albay and Camarines between October 23 and December 10, injuring the plantations there to the extent of an estimated shortage of about 75,000 bales. The last typhoon, of December 6, damaged Sorsogon Province rather severely, and as a result of this, the production for this province during 1916 is estimated to be about 10 to 12 per cent less than during 1915, or a loss of about 12,000 to 15,000 bales. This makes an estimated total loss for the three Southern Luzon provinces during 1916 of about 90,000 bales.

Fortunately, Leyte, Samar, and Mindanao have escaped any damage from typhoons during the year and the plantations there have continued to recover from the effects of the drought of three years ago. In these provinces an increase of production during 1916 is therefore expected, and it is hoped that this gain will nearly offset the estimated loss in the three provinces of southern Luzon. To these bright prospects must be added the extraordinarily high prices paid for fiber since the latter part of 1915, which will undoubtedly induce the producers all over the Islands to harvest the maximum quantity of fiber which their plantations are capable of producing. In many cases, this tendency is unfortunately too marked, with the result that the plants are often injured by excessive harvesting.

Taking all the above factors into consideration, it is believed that production during 1916 will be about the same as that of the previous year. During the first six months of 1916, production is expected to be considerably lower than it would be under normal conditions, but during the latter half of the year it is hoped that it will rapidly increase as the damage caused by a typhoon rarely lasts longer than seven to nine months.

THE RAILWAY IN CHINESE DEVELOPMENT

By J. Selwin Tait

Railways and banks are the twin handmaids of Commerce: railroads bring business to the market, and banks provide the financial machinery to handle it. Of the two the railroad is more important than the bank. Without the latter, it is possible for business to go on, even if limpingly, but without railways and with the consequent lack of accessibility to market, business dies still-born. A country's business grows in proportion to the development of its railroad mileage. Without railways it took hundreds of years to develop Europe's wealth; with the introduction of railways soon after its birth as a nation the United States developed great wealth with astonishing rapidity—and the colossal individual fortunes realized were the wonder of the world.

The unsealing of China, that is its opening up by railways, will revolutionize the commerce of the world. If China possessed railroad mileage in proportion to its land area, and on the same scale as in the United States, it would own 325,000 miles of railroad. If, however, its mileage was pro-rated according to its population, on the same basis as in the United States, then it would have over one million miles of railroad. In round numbers, the United States has to-day a quarter of a million miles of railroad—while China has 6,000 miles and should have a million. It seems a far cry from 6,000 to a million, but the latter will come in time, and, in the process of coming, it seems to me, wealth will be made which will make American affluence look like poverty, so ripe is the opportunity.

If China's population consisted of untrained, half-savage peoples any great railroad extension would have to be postponed until the people were educated up to a certain degree of productiveness or efficiency—a matter of generations. In such circumstances, any attempt to forecast the rate at which Chinese railroad development would proceed, or its effect when developed, would be futile in the extreme. Such, however, is very far indeed from being the case in China. Its people—even in the remotest provinces—are trained and capable workers—skilled handicraftsmen and agriculturists with the inherited lore of three thousand years of civilization, and the skill in handloom, in metals and agriculture handed down in an unbroken line through a hundred generations—more, indeed, for we know that in the time of Confucius, 25 centuries ago, China was a highly civilized country, and there has been no break in her civilization.

It is not, perhaps, too far-fetched a parallel to compare China's opportunities with a hypothetical home condition. Suppose, therefore, our North and South Atlantic States had always been cut off from our North Central and South Central and Western states by insurmountable barriers; and suppose that they were for the first time opened up to interstate and international commerce, would it not be reasonable to prophesy a vast traffic for the new railroads from the commerce springing full fledged from such a connection? That would not be linking up civilization with savagery, but with equal civilization. So will it be with China, and even more so. China's figures are indeed too large for our comprehension. For instance! Conjointly with other countries, United States capital is interested in the Hankow-Szechuen Railway. The building of that railway has been stopped for lack of capital due to the European war. When that railroad enters the vast plains of Szechuen it will tap a population of 78 millions of frugal, skilful, industrial, law-abiding people—a number exceeding our entire population at the beginning of this century, and greater to-day than the entire population of any other country in the world, excepting India, Russia and the United States—the population of one single Chinese province.

The natives of what may be termed China's hinterland work for a mere fraction of our wages. They have been trained through long generations to live simply and almost entirely from the products of the soil, raised at their doors, by a process of intensive agriculture such as neither Europe nor America has ever seen. These people are inured to lives of toil. Adding to these conditions the high quality of their skill, it is not far-fetched to say that the wise introduction of such a potentiality into the channels of modern commerce, and the coupling it up to modern conditions will work a revolution in which a huge international commerce may be built up—for China copies our wares because she likes them and will one day be a purchaser of colossal dimensions.

The question to-day is—are we going to take a commanding share in this the greatest business opportunity the world has ever seen—bar none, or shall we leave it to be explained to an indignant posterity how it was that our eyes were so holden that we failed to see it when it was presented to us?

American wealth has grown more rapidly than Europe's because her opportunity came concurrently with the introduction of railways. China's wealth will be greater than either because it has been dammed up so long; and when the sluice-gates are opened with every modern appliance to aid, it will be irresistible.

CHINA BUYS JAPANESE COTTON YARN

The record shipment of cotton yarn to China was made in March despite the internal trouble in the Republic. In the last ten days of March alone there were shipments of 24,000 bales and total for March amounted to 61,242 bales, the biggest shipments in the annals of Japan's cotton yarn trade with China. The yarn trade has made remarkable progress in recent years, and monthly shipments to China averaged 47,500 bales. The record in the past was 60,200 bales in December last year. Therefore, the internal trouble in China is no more a cause for worry. It is expected that if tranquillity is restored in China there will be greater prosperity in this business.

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Ssupingkai - Chengchiatun Railway.—Japanese journals state that the Chinese authorities have finally consented to construct the Ssupingkai-Chengchiatun Railway in project on exactly the same pattern as the South Manchuria Railway. As a practical warning the Japanese side cited the Kirin-Changchun Railway, which, being radically dissimilar from the S. M. Railway, stands in need of an extravagant outlay for its proposed improvement. Next, the necessity of establishing interlineal connecting service has laid additional stress upon the wisdom of the Japanese contention.

The term of engagement of Mr. Fujine, of the S. M. R. Co., as Chief Engineer of the Ssupingkai-Chengchiatun Railway will be fixed at three years. Out of Y5,000,000 to be advanced by the Yokohama Specie Bank as construction funds, some Y100,000 has already been delivered to the Chinese side. The Chief Accountant of the new Railway is to be recommended by the Yokohama Specie Bank. His appointment will be announced on Mr. Fujine's prospective return from Peking. The construction work will be started soon afterwards.

Shantung Railway Estimates.—The estimates of the Shantung Railway for the next fiscal year amount to about Y7,000,000.

The traffic returns of the Shantung Railway for May were unsatisfactory, showing a decrease of S. Y150,000 from the preceding month. The returns for April were exceptionally good and established a new record. The falling-off in the business was sharp. There were days on which the passengers numbered only 2,000 and the goods tonnage 270, bringing in only S. Y5,000 or so. The total receipts for May were S. Y331,347.55 as against S. Y486,275.83 for April. This decrease was due to revolutionary disturbances. On the Shantung Railway the busiest stations are Seitou and Tsinan, the termini of the Line. Weihsien comes next and is followed by Choutsun. Both Weihsien and Choutsun became engulfed in the eddies of the revolutionary activity. At Weihsien, in particular, the goods traffic practically came to a stop. The visitors to that place are, in the major cases, in quest of some individual gain in connection with the revolutionary agitation.

Japan Discusses Changchun Line.—The price and some matters in connection with the purchase of a section of the Chinese Eastern Railway, which Japan expects to buy from Russia, were discussed at a recent meeting of the Japanese Cabinet held at the Premier's official residence. It is reported that the disposal to Japan of this section from Changchun to Harbin has been under negotiations between delegates of the two Governments. Japan wants to acquire the line, because Harbin is better suited for the junction of the two railway lines, the South Manchuria and the Chinese Eastern Railways, it is said. After the Cabinet meeting General Oshima, Minister of War, Admiral Kato, Minister of Marine, and Baron Ishii, Minister for Foreign Affairs, remained in conference with the Premier on the China question.

According to a later report negotiations have been concluded for the sale of a section of the Railway and the contract has already been signed between the Japanese Ambassador to Petrograd and the representative of the Russian Government. That part of the railway which Japan gets is from Changchun station up to the Second Sungari Station, a little more than 75 miles, altogether, and the price is put at about 14,000,000 yen. After the transfer to Japan the South Manchuria Railway will manage it, the Nichi-Nichi reports.

The same paper reports that the negotiations between the two Governments over the conclusion of a new agreement are proceeding rapidly and are approaching a successful conclusion. After it has been signed the new agreement will be submitted to the consideration of the members of the Privy Council, but its nature is such that it will not be made public.

South Manchuria Ry. Accounts.—At the regular general meeting of the S. M. R. Co. shareholders held on June 17, Baron Y. Nakamura, the Chairman, stated that the property of the Railway Company, as handed over to the Company by the Government, was of an immense value, but was appraised at Y100,000,000. The Chairman further observed that, since the Government did not care to assume the management of the Railway Area, it had devolved upon the Railway Company to take upon itself the task.

The private shareholders made the following suggestions: That the valuation of the Government's shares in the Company be reduced; that the tax on the incomes of the shareholders be reduced; that the restrictions on dividend be abolished; that the Bank of Japan be permitted to accept the shares as security for loans. These suggestions were not acted upon.

The report, which was accepted, showed that the profits for 1915 were 8,080,498 997 yen; the balance from the previous year, 2,560,999,085 yen; making a total of 10,641,498,082 yen.

This was disbursed as follows:

Deposited with the Government as required by law, 404,024.95 yen; dividend for the Government, 2,500,000 yen; dividend for private shareholdes (6 per cent.) 1,560,000 yen; second dividend for private shareholders (2 per cent.), 520,000 yen; special deposits, 2,500,000; rewards to the officials of the Company and social expenses, 300,000 yen; balance left over to next year, 2,857,473,132 yen.

President Nakamura announced that 10 yen on each share of the capital will be raised on October 1 and 10 yen more next spring, making a total of 8,000,000 yen, which will be devoted to meeting a part of the expense of 12,000,000 yen for various improvements this year.

The statement of accounts for the last fiscal year ending March 31, 1916 compared with the preceding year follows:

Profit and Loss Account.

	Cr. Fiscal Year 1915	1916
	1000 Yen	1000 Yen
By Railway Receipts ...	23,894	23,216
,, Steamer ,, ...	1,266	1,051
,, Coal ,, ...	12,648	14,075
,, Harbour ,, ...	2,292	2,290
,, Land ,, ...	1,517	1,778
,, Hotel ,, ...	235	253
,, Electricity ,, ...	1,160	1,101
,, Gas ,, ...	244	203
,, Sundry ,, ...	145	75
,, Interest Account ...	380	624
Total	43,786	44,670

	Dr.	
To Railway Expenditure.	8,174	8,345
,, Steamer ,,	1,220	1,220
,, Mining ,,	10,640	11,858
,, Harbour ,,	1,921	1,963
,, Land ,,	2,491	2,864
,, Hotel ,,	283	309
,, Electricity ,,	723	694
,, Gas ,,	134	114
,, Sundry Losses	695	424
,, General Management Expenditure	5,174	3,088
,, Interest on Debentures	5,564	5,564
,, Writing off Discount on Debentures issue.	680	680
,, Balance for the Term.	8,080	7,541
	43,786	44,670
By Balance brought forward from the preceding Term	2,560	2,625
,, Balance for the Term	8,080	7,541
	10,641	10,166
Disposed as follows:—		
To Reserve prescribed by Law	404	377
,, Dividend on Government shares	2,500	2,500
,, Dividend to Shareholders, other than the Government, at the rate of 6% per annum...	1,560	1,420
To Supplementary Dividend to Shareholders other than the Government, at the rate of 2% per annum	520	473
,, Special Reserve ...	2,500	2,500
,, Bonus to Officers ...	300	300
,, Honorariums for Retired Officers		35
,, Balance carried forward to the next Term	2,857	2,560
	10,641	10,166

Chinese Eastern Railway.—Japanese press reports are circulated to the effect that the Russian Government will transfer to the Japanese Government the Harbin-Kwanchengtzu section of the Chinese Eastern Railway in payment of the prices of munitions. The intrinsic value of this section cannot be computed on the basis of the actual disbursements for construction alone. Such questions as how the railway connections are to be effected at the interlineal terminus and what will be the bearings of this section on the political and diplomatic relations of both countries must be taken into consideration. This section, about 160 miles in length, is appraised by some experts in the neighbourhood of Y25,000,000, which price, it is reported, will prove satisfactory to both parties. In the event of the transfer materializing, the Government will, in all probability, place this section under the management of the South Manchuria Railway Co.

Railways in Hokkaido.—The total length of the railways in Hokkaido will reach 100 miles within this fiscal year, and this remarkable extension of the railway lines is regarded as indicative of the marked developments of commerce and industry achieved in this part of the country. The Hokkaido authorities have decided to celebrate the completion of the

上海英界仁記路第五號

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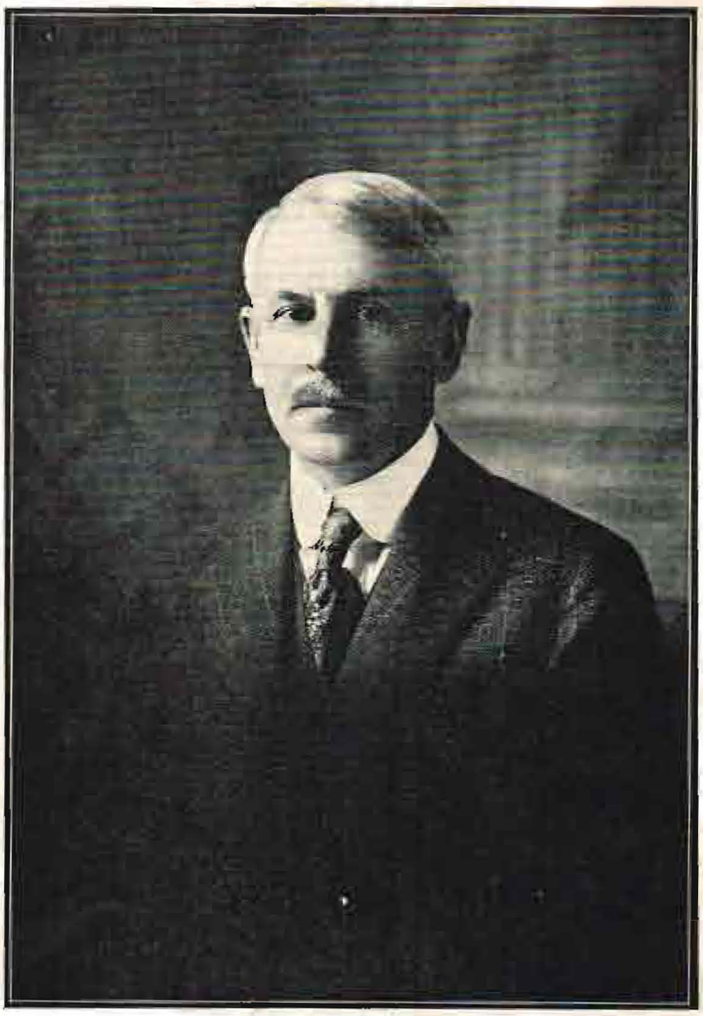

HON. EUGENE E. REED,
Secretary of Commerce and Police, Government of the Philippine Islands

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ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Japan Buys Railway from Russia.—Recent Japanese reports state that the sale of a section of the Chinese Eastern Railway line from Russia to Japan has been settled, but the price and other details of the transaction will not be announced until discussed between special representatives of the two Governments, who will be appointed soon. According to the agreement, Russia will sell the section from Kuanchengtzu to a point in the valley of the river Sungari, so that the Japanese and Russian railways will be divided by the river. Both countries will have their own stations on each side of the river.

An agreement is said to have been reached between the Russian and Japanese Governments as to the appraisal of the Southern half of the Harbin-Kwanchengtzu Section of the Chinese Eastern Railway and an official announcement will be made soon. The appraised value of the 71 mile section is said to be Y 10,000,000.

Ssupingkai-Chengchiatun Railway Plans.—Mr. J. Fujine, Chief Engineer of the Ssupingkai-Chengchiatun Railway, has organized his staff with 22 officials of the South Manchuria Railway Co., engaged by the new Railway for terms ranging from one to three years. Expressing his regrets that the survey was not yet under way, Mr. Fujine said:

"The only excuse for this is that the negotiations at Peking have dragged on longer than at first expected for sundry plausible reasons. Mr. Wu-wu Director of the Kirin-Changchun Railway, appointed Director of the new Railway, came out with me and has gone to Ssupingkai. I intend to follow him in a few days to prepare for the surveying work, which is thought to require a couple of months. Next the plans for construction work will be drafted and the necessary arrangements for beginning the work will be taken in hand. The actual commencement of the work, I am sorry to have to say, will be after the return of spring next year. This will necessarily delay the completion of the new railway to the summer of 1919, whereas October, 1917, was originally set as a probable time for its completion. The expropriation of land necessary for the railway is to be started simultaneously with the surveying operations. Mr. Wu-wu (Director) himself will have charge of the affair. Lieut.-Gen. Wu, at Chengchiatun, has been requested to render whatever facilities lie in his power and we hear that the request has been most willingly acceded to. This task will be begun at the Ssupingkai end.

"How soon the construction work will be finished is difficult to say before the surveying operations are over. However, the proposed route, traversing comparatively level country, the work is expected to make rapid progress.

"The difficulty of collecting the necessary supplies should be taken into account. In principle, Japan is to supply these materials, but, if there is a way open for obtaining a desirable supply in China, such is to be procured. The construction funds of the Railway Loan are subject to delivery from time to time and are kept from use for any other purpose. On the Chinese side a staff of about fourteen experts and clerks has been appointed. The Japanese side may engage a number of experts, and the matter is left to my own discretion. The appointment of the Chief Accountant has not been decided yet, and is unlikely to be determined in the immediate future. In the meantime, I am to hold that post additionally."

Hankow-Ichang Railway Locomotives.—Robert W. Hunt & Co., Pittsburgh, Pa., have invited tenders on 3 ten-wheel freight locomotives for the Hankow-Ichang section of the Hankow-Szechuan Railway, Chinese Government Railways, to be made to their office in the Monongahela Bank building, Pittsburgh, Pa.

S. M. R. Traffic Returns.—The South Manchuria Railway traffic returns for the month of June were as follow:—

		Increase or decrease against June 1916.
Receipts		
Passengers ...	Y380,618.71	+107,287.18
Goods.....	998,848.46	— 74,631.02
Warehouse ...	34,042.93	+ 11,851.86
Miscellaneous.	62,701.93	— 3,322.55
Total	1,476,212.03	+ 41,185.47
Daily average	49,207.06	+ 1,372.84

Electric Tram to Kodzu, Japan.—The Imperial Railway Bureau began yesterday the surveying of the proposed electric tramway line between Sakuragicho, Yokohama, and Kodzu. From Sakuragicho station, the bureau will build an elevated line as far as Minami Ota, thence an ordinary line will be built to Kodzu. At Ofuna, a branch for Yokosuka will be built. It is the intention of the railway authorities to run electric trains in the neighborhood of Tokyo and for long distance steam trains will be used. From Numadzu to Shidzuoka on the Tokaido line, another electric tramway line will also be built for rapid transportation.

Russia Wants 600 Locomotives.—The Russian Government's locomotive inquiry, concerning which it was noted in the Railway Age Gazette of May 26 that the Canadian Locomotive Company had been asked to quote prices on 600 locomotives, is understood to include at least 600 and possibly 1,000 engines of the Decapod (2-10-0) type similar to those which were ordered about this time last year.

Manila Railroad Purchase.—Not only those interested in the Philippine Railway Co., but former officials of the Islands are expressing vigorous views as to the unwisdom of the Philippine Government in even considering the purchase of the Manila Railroad Companies Lines, a full account of which project has been published in recent issues of the Far Eastern Review. The latest opponent of this experiment in Government ownership is former Supreme Court Justice Charles Elliott, later Secretary of Commerce and Police, who intimated that the Filipino efforts for independence had a railroad deal involved in the general question which Congress should investigate.

"If the bill is passed by Congress, and independence is given to the Islands," he declared, "the deal for the purchase of the Manila railroad will be handed over along with what they call freedom. British bondholders will be several million dollars to the good, and if the new republic of the Philippines neglects to observe the obligation assumed by the contract, these bondholders will, of course, expect Uncle Sam to see that the contract—made while the Philippines were his agent—is performed. A more pernicious and unjust scheme never was, in my judgment, put over on a trusting and ignorant people." Judge Elliott said vigorously. "Just as the Wilson-Harrison administration wants to grant independence to the Philippines, it is loading them up with a railroad which they are supposed to operate successfully after a man of the experience and skill of Horace L. Higgins, president of the Railway backed by the Speyer Syndicate, has been unable to make it pay expenses."

Motor Traffic in Philippines.—Collector of Internal Revenue Rafferty reporting on new transportation facilities in the Philippines says that transportation to and from the east coast of Luzon, which has always been very backward and difficult and often dangerous, is now much improved by the extension of the railway from Manila to Hondagua and the additional shipping facilities afforded north as far as Casiguran and south as far as Daet in connection with the railway service. The extension of public roads has resulted also in great reductions of the cost of transportation and brought about a consequent reduction in the cost of food products. In some cases, hemp for example, the cost of transportation to market is only a quarter of what it was before, the same applies to rice sold to the hemp farmers; thus giving back to the people indirectly in a short time the amount of money invested by the government in public roads. Aside from the advantage to commerce in good roads, they have added much, since the arrival of the automobile truck, to the social life of the Filipino, as was evidenced by the great number of people that are to be seen traveling on automobile trucks wherever good roads are found, at a rate astonishingly low. An idea of the cheapness of travel by motor car is shown by the following: rate from Iriga to Legaspi, a distance of 65 kilometers, P1.50 (40 miles for 75 cents gold), from Ligao to Legaspi, a distance of 30 kilometers, P.0.40 (18 miles for 20 cents gold.) Despite the keen competition which prevails in almost every district, the overcrowding of these passenger trucks is the rule, particularly in the province of Albay.

Linking Siam and F. M. S.—The railway to link up the Royal Siamese Railways and those of the Federated Malay States is making rapid progress despite the war. The railway starts from Alor Star Station and runs in a North-easterly direction through Perlis to the Siamese Frontier. Its length is 24.1 miles.

About five miles from Alor Star on the Jitra-Chongloon-Singora main cart road, is Anak Bukit Station. Here are the Headquarters of the Kedah-Perlis branch of the F. M. S. Railway. Near the railhead at Kubong Liga is the bungalow of Mr. R. H. Pope, the Assistant Engineer. Work was commenced on May 20, 1915, and three-quarters of the earthwork has been completed, while the rails have been laid as far as the 92nd mile from Bukit Mertajam and 36 miles from Alor Star.

The gradients are easy with long stretches of straight and a few curves. At the 76th mile the line crosses the Kodian-Sanglan Road. As far as Aro, where H. H. The Rajah of Perlis has his Istana, the line is carried on a long low bank— four or five feet high—through padi fields and swamps.

When completed, the line will have 111 bridges and culverts, a large number of which have already been constructed, while most of the others are in hand. The only bridge of any importance is the one that crosses the Anak Bukit River, not far from the station of that name. This bridge has a central span of 150 feet with two shore spans of 100 feet each. All the work on this bridge has been completed with the exception of the steel work of the 150 foot span that has not as yet arrived from England. The ground being swampy, the foundations of the larger bridges have had to be carried down to a considerable depth in some cases. The abutments are built on brick wells or cylinders, which are sunk until firm ground is reached, the interior being filled with cement concrete, the deepest of these wells being 42 feet below the level of the ground. The abutments of the smaller bridges are built on pile foundations in swampy ground.

All the crossings at the cart roads are level-crossings, there being no overhead bridges. Provided that the materials arrive from England in time, it is expected that the Siamese line will be completed through to the frontier about a year hence.

A later report states that the Chief Resident Engineer for Construction, F. M. S. Railway, put through the railhead to the Perlis-Siamese Boundary on July 2nd. This is the terminus of the F.M.S. Railway.

The Siamese Southern Railway from Singora to Bangkok according to present arrangements is to be opened on August 15th next. The train will only run in the day time and passengers from Singora will pass the afternoon and night at Tongsawn (the junction for the Trang branch) and the second night at Chumpnon, arriving the next evening at Bangkok.

Russian Railway Construction.—According to the explanatory note of the Russian Ministry of Finance regarding the estimates of State revenue and expenditure for 1916, the total length of Government railways under construction and for the construction of which permits had been granted and plans made at the beginning of September, 1915, amounted to 5,600 miles, for which the sum of $554,000,000 would be required. Of these railways, 3,500 miles were being constructed (at a cost of $324,800,000), permission for construction had been granted on 300 miles (cost, $27,295,000), and further construction had been planned for 1,800 miles ($202,086,000).

In regard to the construction of railways by private companies, the length of railways, on which permission for construction had been granted by the Government with a guaranty of the stock capital, amounted to 745 miles, for the sum of $49,900,000; besides, permission had been granted to construct branches (12 in number) of the total length of 90 miles, at the cost of $2,730,000; and a further permission had been granted for the construction of 7 miles, at the cost of the builders, for the sum of $293,000.

Consequently up to September 1, 1915, permission had been granted for the construction of private railways of 842 miles in length, at an actual cost of $53,000,000.

Besides the above, there exist projects for the construction of 4,267 miles that have been approved for construction by the committee of new railways, the building to be carried out by means of private capital ($289,700,000); while a number of projects for railways of a total length of 5,300 miles, to cost $340,000,000, will be investigated in the near future.

In regard to the realization of these projects, it must be noted that the conditions created by the war and the consequent difficulty of attracting private capital for the construction of railways makes the date of the execution of these projects uncertain.

The United States Commercial Attaché at Petrograd reports that the railway extension from Julfa, on the river Araxes, to Tabriz has been completed. The gauge of the new railway, which is 93 miles long, is the same as that of the Russian railway system. The railway is under Russian control and management, and is not at present intended for the conveyance of passengers. The track follows, between Julfa and Tabriz, the line of the Indo-European telegraph system of India. From the town of Sophian, about 25 miles from Tabriz, a branch of the railway has already been completed to Lake Urumiah, around which is one of the richest districts of Persia. This railway, with its branch line, will doubtless cause an enormous development through all this part of Persia. Much new land will be opened up to agriculture, and various mines, chiefly copper and wolfram, will be worked, which have not been developed because of transportation difficulties. Possibly the railway may be extended to Teheran and thence southeast to Ispahan, and into Baluchistan, whence it could connect up at Nushki with the railway system of British India.

Shanghai Electric Construction Co.—At the tenth annual meeting of the Shanghai Electric Construction Company, Ltd., held at Basildon House, London, E.C., on May 19th., Sir Alfred Dent, chairman of the company, reported gross traffic receipts amounted to £117,975 4s. 3d., from which has to be deducted £31,707, 5s. 4d. for loss by native copper coinage, leaving effective receipts of £86,267 18s. 11d, which is practically the same as in 1914. After deducting the working expenses in Shanghai, an operating profit remains of £35,003 3s. 7d. as compared with £35,892 9s. 8d. in 1914. This year's account benefits by the larger amount brought forward from 1914 of £4,702 17s. 2d., and after charging London expenses and interest there is an available balance of £35,786 17s. 1d. as compared with £34,902 17s. 2d. last year. This was dealt with by transferring £10,000 to reserve for renewals account, which brings that account up to £46,816 16s. 5d., after charging it with £638 19s., and £2,000 to preliminary expenses account, reducing that item to £18,000. From the balance of £23,786 17s. 1d., a dividend of 7 per cent. will absorb £22,400, and leave £1,386 17s. 1d. to carry forward, or about the same amount as carried forward in 1913. The expenditure on construction account was £12,567 (about £10,000 less than last year), and the principal items were as follows:—

Permanent way and overhead equipment including loops at railway station	£ 377
Buildings extension and installation	1,038
Rolling stock—completion of 10 new motor cars	5,794
Railless traction	196
Land for sub-stations and sundry improvements...	1,521
Temporary overhead feeder cables	3,641
Total	£12,567

"We also added plant and tools to the value of £1,399. Power expenses have been reduced to £8,684 against £9,813 19s. 1d. in 1914, and have been brought down to c.2.97 per car mile against c.6.15 in 1909, the average cost per unit being c.3.10. A further reduction per unit is looked for when the Council have completed their new Riverside station, when we shall be able to do away with the overhead feeder cables which were put in to replace the original underground cables which have proved unsatisfactory in many instances. The overhead cables were purchased on favourable conditions, and the materials at to-day's prices could be sold on terms that would go a long way to cover the original cost. Last year were carried nearly 60 millions of passengers against 11¾ millions in 1909. For the first three months of this year 15½ millions of passengers (or 2 millions more than for same period in 1915), which is at the rate of 62 millions per annum, and as this increase will be maintained, we have applied to the Municipal Council for permission to introduce 15 new trailers. This, if sanctioned, will provide us with an equipment of 90 motor cars, 70 trailers, and 7 railless cars, or a total of 167 against the original equipment of 65 motor-cars. All the cars are as usual being maintained in a thoroughly efficient state. The effective receipts for the first four months of the year amount to $348,638, against $301,346 in the same period of 1915—an increase of $47,292.

"Notwithstanding the assurances given to the Diplomatic body in Peking by the Chinese Minister of Finance, the depreciation of the native copper coins has been accentuated and the ratio of loss to gross receipts has been increased to 28-58 per cent.—6.91 per cent. on our share capital, as compared with 26.04 per cent. in 1914, and the loss for the year amounts to £28,038 9s. 1d. against £25,880 in 1914. At present there are good reasons for believing that the depreciation will be arrested at no distant date, and should this charge on our receipts be minimised or eliminated altogether, it is obvious our account will in future be very materially improved. The rise in the silver exchange is also greatly to our advantage.

"The Fokien new roadway has been completed in cement concrete, and railless service was resumed on July 6 last, the weight of the cars being reduced to meet the requirements of the Council. The cars so altered have operated most successfully on the smooth surface, and since the opening to Dec. 31 we have carried 1,439,804 passengers, run 49,753 car miles, and collected a gross revenue of $19,347.49, which, after deducting loss on native coinage, working expenses and depreciation, has paid over 6 per cent per annum on the capital employed. The route (which is less than ¾ of a mile) is too short to get the full benefit of the seven cars available, and we have applied to the council for an extension. The staff numbered at the end of the year 1,148 as compared with 1,137 in 1914."

Shantung Railway Locos.—The Shantung Railway has ordered 3 Consolidation locomotives from the American Locomotive Company. These locomotives will have 20½ by 26-in. cylinders, 50-in. driving wheels, and a total weight in working order of 158,000 lb.

Swatow Railway Extension.—Recently the Swatow-Chaochowfu Railway commenced surveying a route between its terminus and the Swatow Harbor water front, a distance of over a mile, with a view to extending the railway to the water's edge. It is planned to construct two bridges over the Han River, each 400 feet in length. It is estimated that improvements costing a quarter of a million dollars (gold) will be made. The rails and bridge girders now in use were furnished by the Carnegie Steel Works and the American Bridge Co., respectively

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Russian Rail Orders.—A recent item in the Wall Street Journal says: "The Russian Government is quietly trying to place orders for over 300,000 tons of steel rails for delivery in the closing quarter of 1916 and the first quarter of 1917. It is seriously questioned whether these orders will be placed, simply because rail mills are in nearly every case booked up until well into next year, and it is thought improbable that capacity to roll so large a tonnage for export within the required time limit will be found."

One Station for Tokyo.—Imperial Government Railway officials are now working on plans for building elevated tracks to bring all the railways now running into Tokyo into the Tokyo Central Station. It is estimated that work to connect the Uyeno and Manseibashi Stations with the Tokyo Station can be finished in two years. The track from the Manseibashi Station will be built first, and should be completed by August or September next year; while the Uyeno track should be finished by April, 1918. The distance between

Manseibashi and Tokyo Station is 4,200 feet, and at first two double tracks for electric cars will be laid in the elevated track. This work is already under way and about 750 laborers are employed. The work has progressed far enough for the arches to be erected. They will be made of steel frames and concrete. The scarcity of steel, it is feared, may delay the completion of this track.

Osaka Tram Proposed.—Mr. Yasuda Jenjiro and other promoters of the proposed Keihan (Tokyo-Osaka) Tramway Company have called on Count Okuma and Dr. Soyeda, president of the Imperial Railway Bureau, and asked the authorities to grant a permit to build a tramway line between Tokyo and Osaka, a distance of 285 miles. The promoters sent an application a few years ago to the Government, asking permission to build a line connecting Tokyo and Osaka in six hours, with a car leaving Tokyo every 30 minutes, but failed to get a permit at that time. The capital to be invested in this enterprise is 100,000,000 yen, The work will start as soon as a charter is granted.

Peking-Mukden Bridge.—The through train which reached Hsinmintun on June 29th inst. was the first to cross the newly erected Hsinminfu bridge on the Peking-Mukden Railway. Conductor Kuo was in charge and Locomotive-Superintendent Shellam travelled down specially from Mukden with a large party of Chinese, Japanese and American passengers. The people at Hsinmintun celebrated the occasion by firing crackers before and after the train crossed this bridge, which replaced one destroyed by last year's floods.

The Authorities of the Peking-Mukden Railway appropriated $400,000 for a new bridge, embankments, a new station and quarters and goods depots to replace the buildings ruined by the flood. The new bridge measures 1030 ft. long. District Engineers Moller and Barnes superintended the work of construction.

S. M R. Co. Buying Rails.—The South Manchuria Railway has resumed its purchases of rails, the buying of which was discontinued at the end of July last year. The prices offered range from 40 sen a foot for 80 pound rails to 6 sen for 12 pound ones. The rails may be presented for purchase at any railway station, a district agency, or a linemen's office.

S. M. R. Calling Up Capital.—The South Manchuria Railway Company has decided to call up the payment of the second instalment on new shares on October 1. This will place 4,000,000 yen at the disposal of the company.

C. E. R. Shops Burned.—The Railway Workshops of the Chinese Eastern Railway, Harbin, were destroyed on July 6, by fire, the origin of which has not been ascertained. A large number of locomotives and cars imported in parts from the United States were in course of erection. Many were lost. The loss is estimated at more than 750,000 roubles.

SHIPPING

Pacific Mail Abandons Pacific?—Advices reached Manila late in June that the Pacific Mail Steamship company had abandoned the trans-Pacific service and were placing their newly purchased Dutch steamers on the Mexican, Panama and Central American run. Only recently it was announced that the Toyo Kisen Kaisha, Pacific Mail and the Canadian Pacific had arranged for an inter-change of tickets and the latest advice raises some doubt in shipping circles, as to the exact conditions that now obtain.

This report may have been occasioned by a delay in sailing of the first steamer of the new Pacific Mail line which Japanese newspapers say will leave San Francisco about August 19 and will arrive in Japan during the first week in September, instead of in August as was at first reported. The steamer will clear for home about the middle of October.

Regarding the possibility of the service being restricted to the United States coasts, Shipping Illustrated under date of May 13 has the following to say:

"The Pacific Mail Steamship Co. has started a service through the Canal, terminating at Cristobal, where its vessels exchange cargo with Atlantic carriers. The line will continue essentially the service of the past, running some vessels direct between the Isthmus and San Francisco, and some on a coasting route, calling at Central American and Mexican ports on the way. For the present there will be a sailing from the Isthmus about every 10 days. It is expected that the service will be increased within a relatively short time by the addition of the steamships Colombia, Ecuador and Venezuela, purchased from the Royal Dutch West India Mail. The Colombia is now undergoing repairs in Great Britain of damage resulting from striking a mine. With the addition of the three ships the Pacific Mail will have 10 plying between San Francisco and the Isthmus. The Pacific Mail was formerly prohibited from using the Canal, on account of being owned by a railroad, under conditions contrary to the provisions of Section 11 of the Panama Canal Act. Evidence of the termination of this condition has been furnished to the Canal authorities."

Prior advices from San Francisco were that the Ecuador was to leave that port on June 17, the Columbia July 15, and the Venezuela Aug. 19, each vessel leaving thereafter every 77 days. They will call at Honolulu, Yokahama, Kobe, Shanghai, Manila, and Hongkong outward, and Shanghai, Kobe, Yokohama, and Honolulu homeward. Taken in connection with the ships of the Toyo Kisen Kaisha Company, this new service gives weekly sailings from San Francisco to the far east. These ships are of 5,700 tons capacity, have accommodations for 111 cabin and 200 steerage passengers, and were built at a cost of $4,000,000. They are of the oil-burning type and carry sufficient fuel to make the round trip.

China Mail to Expand.—Announcement has been made by the China Mail Steamship Company, which entered the Oriental service last October, that it is in the market for at least three new vessels. These ships when purchased will be used in the ever-growing freight and passenger trade between San Francisco, China, Japan and the Hawaiian Islands. In order to purchase the new vessels the China Mail Company has made application to the California Commissioner of Corporations to sell 99,985 shares of its capital stock at par, $21 per share, for cash so as to net the company the full amount of the selling price.

It was recited that the company which purchased the steamship China from the Pacific Mail last fall proposes to engage on an extensive scale in the transportation of passengers and merchandise in the trans-Pacific trade, and that with proceeds arising from the sale of the shares the company proposes to pay off a mortgage of $150,000 on the steamship China and approximately $180,000 of other indebtedness and to acquire additional vessels to use in its business. Permission for the sale was granted. According to Look Tin Ely, president of the company and of the Canton Bank of San Francisco, it is the intention of the China Mail Company to continue expanding until they are in a position to care for the great amount of freight that they have been called upon to handle.

According to the Japan Advertiser of July 8, Captain Dobson of the steamer China is said to have received a cablegram from the head office in San Francisco, asking him to conduct a survey of two Austrian passenger liners interned in Shanghai. The story continues that negotiations were opened with the company owning the Austrian ships. They are both larger than the China and are well equipped. After an inspection of the ships made by Captain Dobson a brief message was sent the San Francisco office, where full particulars will be submitted to the board of directors upon the China's arrival. As it is almost impossible to have ships built at this time, it is expected that the China Mail will buy the Austrian ships if they meet requirements. Captain Dobson refused to say anything yesterday about the matter. Only three Austrian ships are interned in Shanghai now. They are the Bohemia, the China and Silesia.

American Hawaiian Line's Plan.—Recommendations have been made by H. W. Roberts a representative of the American-Hawaiian Steamship Company, that the Philippines be included in the company's ports of call.

Mr. Roberts, who is at the head of the Los Angeles branch office of the company, has been touring the orient to investigate freight conditions. After visiting several Japanese and Chinese ports, as far as Hongkong, Mr. Roberts came to the Philippines as a round trip passenger on the British steamer Chinhua, calling at the ports of Manila and Iloilo. He also visited Cebu, and expressed himself as highly pleased with the present freight conditions in the islands.

The American-Hawaiian Steamship Company with home offices in New York at present operates 26 freighters aggregating 260,000 tons, all oil burners. Ever since the opening of the Panama Canal, the company has been operating a line running from the Atlantic coast by way of the canal to Los Angeles, San Francisco, Seattle and on to Honolulu for sugar. Returning boats touch only at San Francisco where the company has the main Pacific offices, and from this port back to the Atlantic. Recently, however, on account of the closing of the canal due to the last landslide, the company inaugurated a line to South American ports, calling at Rio de Janeiro and Buenos Aires.

As an experiment, the S. S. Floridan of the company was sent to Hongkong a few weeks ago with Mr. Roberts on board and from the result of this trial trip and his report, it is evident that the field was found to be lucrative, as another boat, the Georgian, will be sent out to the British port in time for the return of Mr. Roberts, and which after loading a partial cargo will be taken by him to New Caledonia where a full cargo of metallic nickle has been assured to the company's representative. It is understood that the freight paid on this shipment of nickle will be at the rate of $100 per ton, laid down in Baltimore, on the Atlantic coast via the canal.

Although Mr. Roberts was non-committal, as to the probable recommendations he would make to his home office, of the advisability of inaugurating a regular Oriental run by the company's boats, he stated that in case such a run was considered the probable ports of call would be Yokohama, Kobe, Shanghai, Hongkong and Manila, and if freight conditions warranted, Cebu and Iloilo.

Profits of Steamship Companies.—The annual report of the Cunard Line has declared a dividend of 10 per cent. less income tax on the ordinary shares for 1915, and also a bonus of 10 per cent. free of income tax; the Gulf Line of Greenock has declared a dividend of 20 per cent. compared with 5 per cent. in 1914; the Peninsular & Oriental Steam Navigation Company has declared a dividend of 5 per cent. less income tax with an interim dividend of 12 per cent, for six months ended March 31; the Royal Dutch Lloyd's dividend is 12 per cent. against 3 per cent. in 1914; the Royal

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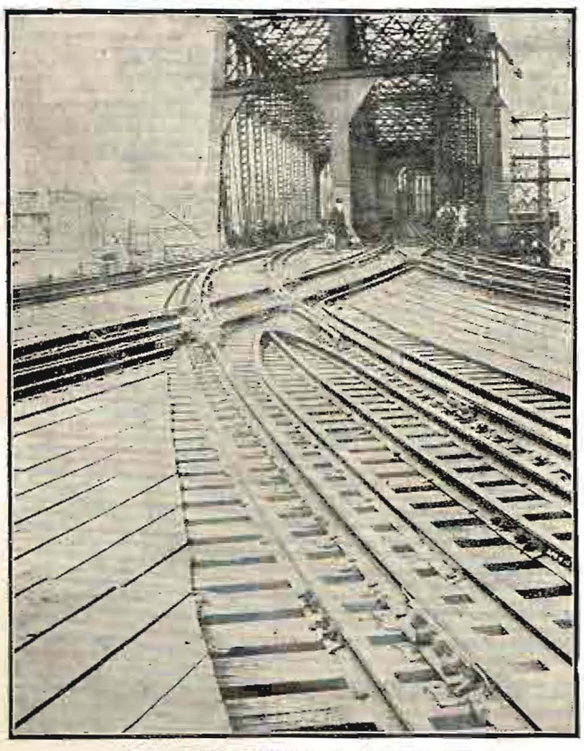

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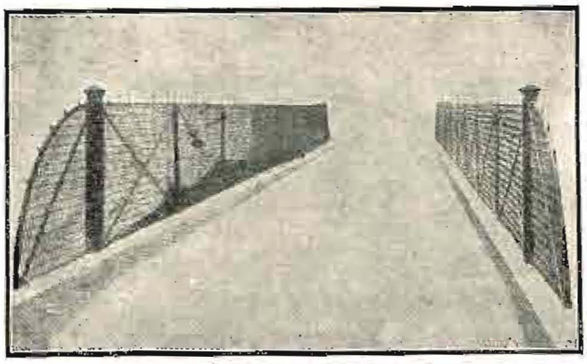

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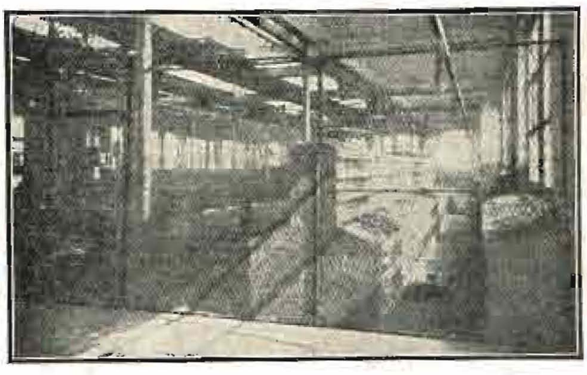

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ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Japan's New Manchurian Line.—It is announced in the Chichangjihpao of Kirin that the Chinese Eastern Railway has been sold by Russia to Japan from Changchun to Laoshaokou for six million yen. Japanese advices deny that the price has been fixed and state that only the principle of calculating the price of 71 miles of the railway between Changchun and Second Sungari has been decided upon. From non-official sources it was learned that the principle of calculation adopted by the two Governments is first, to estimate the cost of construction; second, to deduct from the cost for wear and tear of the railway rolling stock and other property by taking the earnings of the company during those years of the Russian management as the basis; and third to add a sum by estimating what the railway would be likely to earn in a given number of years, taking the past annual earnings as a basis. It was said that on this basis the price of the railway to be sold to Japan would foot up to a little over 10,000,000 yen, the cost of construction having been roughly estimated at between 6,000,000 and 7,000,000 yen.

Laoshaokou is the station on the south bank of the Sungari at the end of the fine steel bridge across the river. It is 58 English miles from Changchun. The South Manchurian Railway Company has thus acquired a very valuable extension, as it will now connect with the Sungari river, which is navigable for steamer as far up as Kirin. The work of changing the gauge to conform with the Japanese lines is to proceed at once.

Foreign observers wonder how this transfer will affect the negotiations regarding the Kirin-Changchun line that are now in progress in Peking. It is thought locally that probably further pressure will be brought to bear on the Chinese Government to secure this valuable line for the South Manchuria Railway Company, and that Japanese steamers will be put on to ply between Laoshaokou and Kirin. If this is done, the extension of the line to connect with the North Korean railway at Chientao will soon be begun. This line has already been surveyed, and although the engineering difficulties are great, the country being very mountainous, it could be built in the course of two or three years. It would give access to vast forests and a rich mineral country lying to the east of Kirin.

Pukow Port Questions.—The effect on Nanking trade of the opening of Pukow is discussed by Mr. E. C. C. Wilton, the British Consul at Nanking, in a recent report. Pukow, on the north bank of the Yangtze opposite Nanking, was included in the harbour limits of the latter city on July 1. This measure must eventually have far-reaching effects on the trade of Nanking, and is already beginning to make itself felt. Results, however, are by no means commensurate with anticipations, owing to the action of the railway transport companies. The controlling interest in these companies is held by the railway directors and other influential men, and they practically monopolize the carriage of goods on the railways, and make every effort to discourage merchants from direct dealings with the steamer companies. They obtain from the railway a rebate of about 30 per cent. on the published railway tariff, and thus are enabled to offer small rebates to exporters, while at the same time themselves making large profits.

In order to compete with the river steamers, the goods tariff on the Shanghai-Nanking railway is very low—considerably lower than that of the shipping companies. It is not worth the while of the latter to reduce their rates, as they fill their steamers at the Ports higher up the river While Pukow remained unopened, it was cheaper for goods arriving by rail from the north to proceed to Shanghai over the Shanghai-Nanking railway, but since it has been possible to load steamers at Pukow, the decreased cost of handling and transhipping should more than counterbalance the lower railway rates. The transport companies, however, who foresaw the loss of their rebate from the Shanghai-Nanking railway, refused to forward goods by steamer unless the shipping companies offered an equal rebate. This proposal not being entertained, the transport companies continued to forward goods only by the Shanghai-Nanking railway which, though working to its full capacity, was quite unable to cope with the immense quantity of cereals and other produce coming down from northern Anhui and Kiangsu. The result was that not only the godowns and wharves at Pukow, but also the stations for miles up the line were choked with merchandise of which there was no means of disposing. It is claimed by the transport companies that steamers are now beginning to call more regularly at Pukow.

Russia's New Siberian Port.—The Russian Government have just opened a new Pacific terminus for the Trans-Siberian Railway. This is the port of Nikolaievsk, at the mouth of the Amur River, near the head of the Gulf of Tartary, about 850 miles north of Vladivostok. Goods received here will be transported inland up the Amur River to Stretyinsk, which is reached by a railroad that connects with the Trans-Siberian line. The new port will be able to handle 72,000,000 pounds of freight and it will thus help considerably to relieve the pressure of Vladivostok.

The Trans-Siberian Railway is one of the great engineering achievements of the world, and a monument to the vision, preseverance, and skill of the Russian engineer. The double-tracking of this 6,677 mile-long railway was begun some years ago. When the war started, thousands of additional men were set to work to hasten this vast undertaking, and the second track has just been finished, in time to facilitate the shipments of the enormous stores of artillery, projectiles, explosives, machinery, and goods of all kinds from the United States and Japan and England that have piled up on the crowded wharves and shores at Vladivostok during the past winter. This port has been overwhelmed by the demands upon its comparatively limited resources. Its contracted harbor has been unable to accommodate the sudden access of shipping, and insufficient docks and the lack of unloading machinery and of warehouses have caused great delays. Thirty-one million (31,000,000) tons of freight arrived at Vladivostok in the first four months of 1915, compared with 2,195,000 tons in the corresponding period of 1914. Thousands of workmen have been struggling night and day to enlarge the docks and port facilities, and the wharves are being trebled in length to accommodate at least forty great freighters at one time. Some of this congestion will be relieved by the routing of shipments to Nikolaievsk which has become chief port of supply for the mining district of Chita and other prosperous Siberian communities previously served via Vladivostok.

Chosen Railways Promotion Bureau.—The Seoul Press reports that a detached office of the Railway Bureau of the Chosen Government General has been established in Osaka. The office will principally deal with business relating to the transportation of goods by the Chosen railways from merchants in Osaka and Kobe and also supply information to the general public concerning conditions in Chosen, more especially with regard to the railways. To make Chosen better known it is intended to give popular lectures on Chosen and illustrate these lectures by means of cinematograph films.

Manila Railroad Subsidy.—With a view to promoting the connection of the principal towns on the eastern coast of Luzon by steamer, Secretary of Commerce and Police Reed has authorized a subsidy of P1,000 a month to the Manila Railroad company for the water service it now renders on the eastern coast of Tayabas in connection with its new railway line to Hondagua. The Hondagua railway line was inaugurated last May by the company, and following it steamer service connecting Hondagua with such principal coast towns as Mauban, Infanta, Baler of Tayabas, Paracale, Daet, Naga and Mambulao in Camarines, and the islands of Alabat, Sangirin and Polillo was established. By this improvement, the rich country on the eastern coast of Tayabas was opened to traffic, and the distance from Manila to the Bicol provinces made shorter.

The railroad company has been operating on the eastern coast the coastguard cutter Samar, which it bought from the government. To improve this service, it has purchased another steamer, the Amelia.

Less Railway Materials Purchased.—Owing to the difficulty in obtaining funds for financing railway developments, there has been a big drop in the importation of railway materials at Hankow. Cars and wagons declined in value by Hk. Tls. 874,000, locomotives by 380,000 taels, and railway sleepers by 937,000 taels. Unclassed materials, however, increased by 275,000 taels in value, leaving a net decrease in railway material of over 1,900,000 taels.

Japanese Railway Receipts.—The receipts of the Japanese Government Railways for the month of June amounted to Y9,408,551, comprising Y4,166,281 in passenger receipts and Y5,242,270 in goods receipts.

Mie Railway Sanctioned.—The Japanese Railway Board has given sanction to the Mie Railway Company, promoted by Mr. Monhichi Kuki and other businessmen at Yokkaichi, for the construction of a steam railway, approximately 4 miles in length, between Yokkaichi and Shigomura, Mie prefecture. The new company is capitalised at 200,000 yen.

Chung Mun-Yew Reappointed.—The offices of the Shanghai-Nanking and the Shanghai-Hangchow Railways have received a telegram from the Chiaotungpu announcing

that Director Chung Mun-Yew has again been ordered to take charge of these two railways. Director Sun To-yu was appointed some time ago owing to Mr. Chung's ill health.

Shanghai Tramways.—The following is the traffic return of the Shanghai Tramways for the month of July, 1916, and for seven months, ended July 31, 1916, with figures for the corresponding periods last year:—

	July 1916.	July 1915.
Gross receipts	$129,419.74	$112,658.53
Loss by currency depreciation	34,282.91	30,489.89
Effective receipts	95,130.83	82,168 04
Percentage of loss by currency depreciation	28.06	28.71
Car miles run	826,126	289,050
Passengers carried	5,820,066	5,041,486
	7 months ended July 31, 1916.	7 months ended July 31, 1915.
Gross receipts	$855,243.91	$745,986.74
Loss by currency depreciation	225.302.20	199,487.56
Effective receipts	629,941.71	546,499.18
Percentage of loss by currency depreciation	27.99	28.50
Car miles run	2,112,727	1,905,519
Passengers carried	37,951,546	38,713,966

SHIPPING

Straits S. S. Co.'s New Vessel.—Another fine mail and passenger vessel has been added to the fleet of the Straits Steamship Co., Ltd., by the arrival in Singapore July 14, 1915 of the steamer Kajang. Built at the Taikoo yards, Hongkong, she embodies every up-to-date feature of modern ship-construction. All the new vessels added to the line recently have proved very handy cargo-carriers and the Kajang will be able to carry 2,500 tons at a draft of 15 feet. This should assure to the owners large profits, especially since the Bangkok rice trade calls for vessels of light draught because of the Menam bar. The Kajang can cross the bar with 2,000 tons.

E. & A. Empire Sold.—The Eastern & Australian steamship Empire, 4,496 tons, has been purchased by Messrs. Lowden Bros., of London, who also bought the Aldenham from the same company. She will be delivered at Marseilles whence she has gone from Taku with a full load of Chinese coolies for France. She was built in 1902 by Messrs. Beardmore & Co., Glasgow, with dimensions 386ft. by 46.7ft. by 27.7ft. and was employed on the run between Australia and China.

R.V.F. Trans-Pacific Service.—A steamer service between Vladivostok and American Pacific ports by the Russian Volunteer Fleet, which was once suspended, it has been decided, will be resumed shortly. The s.s. Angara, ex-Anegawa Maru, which was restored to Russian possession by the Japanese Government, will be the first steamer.

Coolies Shipped to France.—The Shigisan Maru is at Tientsin under charter to carry 1,300 coolies to the same destination. Some of the coolies will be employed for agricultural purposes, and others on road work. The Harima Maru will be the third vessel to carry Chinese coolies to France.

Denies Offer of Austrian Ships.—Denial has been made by the Agent of the Austrian Lloyd that three steamers at Shanghai have been offered for sale to the China Mail Steamship Company by the Austrian Lloyd. The steamers that have been tied up here since the war by the Austrian shipping concern are the Bohemia, Silesia and the China. They were said to have been offered to the China Mail line for (G) $1,500,000—which is at the rate of (G) $500,000 each. The China Mail is now operating the one steamer, China, and has been scouring the world for more tonnage as all the freight and passengers that their one liner could handle have been obtained at war-boom rates. It is announced that if the sale of the interned Austrian ships is made, they will not be used until after the war is over. The three steamers are part of the Austrian naval reserve and the consent of the government would have to be obtained before the sale could be made.

Japanese Canal Postponed.—Mr. Okada, one of the promoters of the proposed Keihin (Tokyo-Yokohama) canal, has applied to the Government for permission to postpone the work for another year. Mr. Okada received a permit which provided that the work commence on August 7, 1916. As the reason for postponement, Mr. Okada submitted to the Government that machinery and other materials for dredging have been raised in price on account of the war.

Another canal in prospect is that at Kawasaki near Yokohama as a measure inviting the establishment of factories. According to the plan, the capital for the construction of the canal is 1,000,000 *yen* and the ground purchased is 350,000 *tsubo*. The length of the canal will be 7,200 feet and its width 120 feet. Both sides of the canal for the length of 780 feet will be reclaimed for the establishment of factories.

Minnesota not Japanese.—That the big American liner Minnesota, which formerly ran on the Great Northern line between Seattle and the Orient, has been purchased by the Toyo Kisen Kaisha, was reported in a cablegram from the United States to Japanese papers. This report, however, is denied by Mr. Ryozo Asano, one of the directors of the company. Mr. Asano admitted that negotiations were started some time ago, but were dropped and have not been resumed. The Korea, which was handed over to the T.K.K. on July 12, may have been the basis for the report about the Minnesota.

China Coast Ports Shipping.—Tientsin: The total number of vessels which entered and cleared the port of Tientsin in 1915 was 1,962 with aggregate gross tonnage of 2,233,403, showing a decrease of 333 vessels of 665,720 tons over 1914, in which year the total was 2,295 vessels of 1,899,123 tons.

Antung: During the year 1915 there was an increase of 204 vessels of 45,408 tons compared with 1914 on the total shipping which entered and cleared that port. The totals for the two years were 586 steamers of 313,018 tons in 1915 and 382 steamers of 267,610 tons in 1914.

Chinwangtao: During the same period the number of vessels that entered and cleared that port was 890 of 1,341,327 tons and in 1914 the total was 1,108 vessels of 1,647,648 tons, showing a decrease of 218 ships of 306,421 tons from 1914.

Chefoo: The shipping returns for Chefoo for 1915 give a total of 3,384 vessels with aggregate tonnage of 2,870,160 in both entries and clearances combined, being a decrease of 314 ships of 507,915 tons from 1914, in which year the total was 3,698 vessels of 3,378,075 tons.

Newchwang: The total number of the incoming and outgoing vessels for Newchwang for the same year was 973 of 1,168,729 tons, showing a decrease of 136 ships of 147,702 tons from 1914.

Forecasts Post-Bellum Conditions.—There is no sort of doubt that as soon as this war is over, says the New York Journal of Commerce, there will be a strenuous effort on the part of the British and German shipowners to revive and extend their activity to the utmost. It will not be surprising if there is a pretty close association and co-operation on the part of both nationalities in their rivalry. The British companies will be more likely than heretofore to work together in a common interest in the distribution of trade and in economy and efficiency in methods. Something similar is likely to take place in Germany and both may have their Governments behind them. There are many British vessels to be relieved from service as naval auxiliaries, and many German vessels to be released from internment. At the same time with this renewal of the supply and revival of activity of merchant vessels in the ocean trade, it is likely to be found that for a time at least there will be a falling off in the use for them. There will probably be a complete cessation of the transportation of munitions and war supplies on merchant vessels, and there is sure to be a reduction in various classes of imports and exports as compared with the ante-war period. While there has been considerable loss of shipping during the war, there has also been a good deal of activity in replacing it. Those who are figuring upon a great expansion of American merchant marine and the trade in which it is employed after the war is over, will do well to keep in mind what there is going to be to contend with. Success will call for intelligent and persistent enterprise coupled with freedom from oppressive legislation, and the American shipowner will need the fair chance more than ever.

FINANCE

China's New Budget.—It is understood that a rough estimate of the different items of expenditure for next year's Budget is being made by the Ministry of Finance. The funds to be allotted to the different branches of administration show no marked change from the Budget for the current year except that the amount set aside for education and industry will be increased. The allotment of funds to the various branches of administration for next year is in the following ratio:—1 per cent for diplomatic affairs, 10 per cent. for Internal Administration, 45 per cent for financial administration, including the repayment of foreign loans and indemnity funds falling due next year, the payment of Tsing Imperial House Pension and the redemption of notes, etc., 30 per cent for military expenditure, 2 per cent for judicial administration, 5 per cent for education, 4 per cent for the encouragement of industry and commerce and 1 per cent for the improvement of means of communication.

Finance Minister Retrenching.—Mr. Chen Kin-tao, Minister of Finance, has drawn up a plan in which he requests every department of the Government to cut its administrative expense as much as possible. He is said to have adopted this plan of retrenchment because his loan proposals to Japan, the Quintuple Syndicate and the United States have all proved a failure.

Japan has declined to accept his proposal, saying she will not lend any money to China until a perfect agreement has been concluded between the North and the South. The International Bankers' Syndicate has also refused the Chinese Minister's proposal, while for the time being the United States has declined to lend any money to the Chinese.—*Asahi.*

Bird

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THE FAR EASTERN REVIEW

遠東時報

SHANGHAI ✣ PEKING ✣ MANILA

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GENERAL TUAN CHI-JUI
CHINA'S PREMIER AND MINISTER OF WAR

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Foochow Railway Survey.—An official was directed in 1915 to make a preliminary survey for a proposed railway from Foochow to Mamoi (Pagoda Anchorage). A survey bureau was established and the flags of surveying parties were to be seen on the plains and hills in the neighbourhood. Various permanent triangulation stations have been established and marked by beacons. Part of the Lienchiang River also has been surveyed with a view to dredging. The waterways of the city have been cleaned and dredged, and the streets kept clean.

Chao-Shan Railway Traffic.—The total number of passengers carried on the Chao-Shan Railway is estimated at 1,002,643, and the total amount of goods carried at 23,953 tons. The gross earnings for the year amounted to $321,471. This line runs from Swatow to Chaochowfu—24 miles—and was inaugurated in November, 1906. The station at Swatow is some 2 miles from the business quarter and difficult of access. With the view to compete with the waterborne traffic a project is on foot to extend the line in proximity to the harbour, but this will entail a heavy expenditure for bridging and bunding the waterways which separate the station from the town, and since it is an axiom that waterborne trade of heavy and bulky goods will always be able to hold its own against railway competition it is doubtful if this project will mature.

Canton-Hankow Railway.—The Yueh-Han Railway is still under construction. The stations Mapa and Shiuchow, 130.08 and 139.28 miles respectively from Wongsha terminus, were opened to traffic in June, 1915. The line has carried about 4,850 passengers daily, paying on an average fares amounting to $1.436. The average number of tons of goods carried by the line is 260 per day, and the freight thereon is $1,115. Shortly after the opening of the Shiuchow station, the line suffered a good deal from the flood, as most of the earthworks were washed away. From the 10th to the 21st July water from the river overflowed the track to such serious extent that the whole line was forced to stop running. It took a month to restore the line to comparative order at a cost of $110,000. From the 17th to 21st sections, at the end of the Kwantung portion of the line, only surveys have so far been done. It is learned that after the completion of the tunnel at Kaolintsun, in the 16th section, construction of the line will probably have to be discontinued, owing to the straitening of the Company's finances. The Canton-Samshui branch of the Yueh-Han Railway has collected $2,340 daily, of which passengers contribute $2,290 and freight $50. An amount in the neighbourhood of $15,000 was expended on account of repairs to the line caused by the flood.

Sunning Railway Earnings.—The earnings for the year of the Sunning Railway line amounted to over $800,000. The most profitable traffic, chiefly passenger, proved to be on the sections between Pakkai and Kongmoon town and the Sanwui city. An extension of the railway to Yeungkong is under contemplation.

Canton-Kowloon Railway Traffic.—The total number of passengers carried by the Canton-Kowloon Railway during the 12 months of 1915 was 1,904,344, and the number of tons of goods (including parcels) was 45,741.

Total receipts for the year.....	$ 794,446.36
Total expenditure, including interest paid for loan service, during the year	1,827,665.25
Deficit.....	$1,033,218.89

No extension was undertaken during the year. The proposed connexion with the Yueh-Han Railway by a line running to the northward of Canton city is still under negotiation. There is a 2-foot gange light railway, 5½ miles in length, connecting the Lokong group of villages with Namkong station. 17 miles from Canton. A similar line to run from Tsengshing to Sintsun station, is about to commence operations. Both these and the Canton-Kowloon lines will be of great mutual benefit. The very heavy loss sustained by the railway during the year was due to (1) the keen competition with river steamers, (2) the disastrous flood in July, and (3) the enhanced cost of railway material owing to the war. From June, 1915, two more through express trains were inaugurated, one departing from either end at noon. These two additional trains have afforded great convenience to the public; and the receipts therefrom have steadily increased.

The building of the new terminal station at Kowloon made satisfaetory progress, and by the end of the year was nearly completed. The night train serviee remained suspended throughout the year.

Samshui-Canton Railway.—Mr. R. C. Johnson. Engineer-in-Chief of the Samshui-Canton Railway, reports as follows concerning the working of the line during 1915: Passengers carried, 4,008.819; Passenger receipts, $812,383; Cargo carried, 7.841 tons; eargo receipts, $16,830; Miscellaneous receipts, $5,445; total reeeipts, $834.658; total expenditure, $480,010; net profit, $354.648. This is a decrease as compared with 1914, but not as much as might have been expected, seeing that communication was interrupted for more than two and a half months by the floods, which neeessitated the expenditure of about $70.000 for various repairs. No extension of the line is eontemplated while the war in Europe continues.

Russia and Chinese Railways.—According to a Washington, D.C. dispatch, the Russian government immediately after the close of the war, will issue a loan of $24,333,000 to China, to be used exclusively in the construction of five railroad lines in Manchuria, according to an agreement just reached between the financial agents of the two countries, the details of which have been reported to the state department by Consul Caldwell at Vladivostok.

Nanchang-Kiukiang Railway.—Concerning the recent flotation of a Japanese loan of $2,000.000 for the Nan-Hsun (Nanchang-Kiukiang) railway by the said Railway Company at Kiukiang, the members of the Provincial Assembly of Kiangsi have sent in a telegram to the Government, according to Peking advices, strongly denouncing this movement and requesting that an order be issued by the Ministry of Communications to put an end to the loan. The loan was to bear 8½ per cent interest per annum with the railway properties as security. This led to the fear among the gentry that Japan in time would secure eontrol over the Central Yangtze Valley through this line. The senders of the telegram remind the Government that the Japanese Government demanded by ultimatum last year the right of constructing a railway from Nanchang to Tsaochow and that as the Yangtze-Kiang is regarded as a British sphere in China, the eontrol of the Nan-Hsun Line by Japan might lead to complications with Great Britain. It is reported that $220,000 had already been advanced by the Japanese Eastern Development Company at Hankow to the borrowers without waiting for Government sanction.

Lift Ban for Munition Shipments.—The limitations that were placed on the shipment of freight from Changchun, the terminus of the South Manchuria Railway, to Harbin by the Chinese Eastern Railway have been removed, the railway being needed for the shipment of munitions for the Russian Government. The Chinese Eastern Railway has been earrying about 150 tons of goods a day since July 20 and since that date these limitations have been in force.

The Kirin-Changchun Railway.—A Changehun telegram to Tokyo states that the negotiations over the revision of the Kirin-Changehun Railway Agreement between China and Japan which are in progress in Peking are expected to be concluded in September. The amount for the new loan proposed by Japan is Yen 6,500.000, while China demands $10.000.000. There being a fear that the capital may be used for other purposes than the railway, the negotiations are delayed. The Railway is reported already to have spent silver $6,500,000.

Railways in Japan.—According to a recent report the total mileage in the islands of Japan is 5,768 miles of state railways and 1,672 miles private railways. In Chosen or Korea the Government railway is 1,060 miles, while the private railway has only 110 miles.

The south Manchurian Railway has 701 miles, the Formosan Railway 320 miles and the line of private railway in Formosa is 261 miles. There is a railway of 60 miles in Sagbalien.

If to these, the Shantung Railway and the Chinese Eastern Railway are added the total length of Japanese owned Railways will be over 10,000 miles.

New Cars for Japan.—Japanese Government Railways have taken in hand a wholesale repairing of goods ears in anticipation of the congestion of railway goods consequent upon dearth of ships' hold space. The repair of altogether 3,500 goods cars is expected to be completed by Oetober. An order for 1,000 new 15 ton goods cars to be finished by April next year has also been placed with private factories.

As a result, the carrying capacity of the Northern lines will be enlarged from 800 tons a day to 1,200 tons a day, and the usual congestion of cargo on those lines will be completely relieved. However, the connection service between the Kobe-Shimonoseki and

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THE FAR EASTERN REVIEW

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Engineering
Finance ❋ Commerce

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GENERAL FENG KUO-CHANG
VICE-PRESIDENT OF THE REPUBLIC OF CHINA

RAILWAY PROGRESS IN CHINA IN 1915

[FROM MARITIME CUSTOMS REPORTS, 1916]

Although the financial stringency incident upon the European war compelled most of the railway projects in China to mark time, some substantial progress was made in several of the new lines and all are prepared for the resumption of construction work as soon as funds are available. The Commissioners of Customs of the Yangtse valley districts have furnished the following information in their 1915 reports which have recently been made public:

Hankow-Szechuen Line

From Ichang the Commissioner reports that international financial stringency, due to the continued war in Europe, brought active work in connexion with the Ch'uan-Han Railway to a standstill in September, when all the foreign engineering staff except the chief were dispensed with, and the latter retained for custody of property pending the return of favourable conditions. But it is believed that very sound investigations were made, and these were reported in detail with photographic illustrations to the authorities concerned.

All preliminary surveys of the Ichang-Kweichowfu section were completed and the final location carried to a point 35 miles west of Ichang in the early spring. The length of the proposed Nanto tunnel was reduced to 17,475 feet. Its eastern portal is to be situated 13 miles west of Ichang and is to be reached via the San-Yu-tung Glen at a point 7 miles from the left bank of the Yangtze. The western portal is to be 19 miles from Ichang by river, about 600 feet from the left bank, near the village of Nanto. It is estimated that this tunnel, the largest yet projected in China, could be constructed in four years.

The interval between Kweichowfu and Siaokiang was linked by a preliminary survey, and the final survey of the I-K'uei section finished in the June quarter. A traffic report is said to be in preparation, which should demonstrate the commercial soundness of the scheme, as its technical practicability has already been demonstrated. To this a civilian may venture to add that such a railway would seem to be of at least equal strategic importance to the Central Government, rendering Szechwan and Yunnan accessible to the movement of troops from the north-east, at present dependent upon a dangerous and undeveloped waterway not available for steam transport during the winter season.

From Changsha it is reported that work on the Changsha-Yochow-Hankow Railway line, which is to form a section of the Canton-Hankow line, has progressed favourably. Earthwork is completed for about 66 miles north of Changsha and is also completely through to Yochow with the exception of some small gaps. The culverts and masonry work of the small bridges have nearly all been completed, and the steelwork is being erected. The foundations of the piers of the major bridges are all in hand, many of them being already completed, and all the masonry work of the large bridges will be finished by the end of 1916.

Owing to the European war, the date of delivery of the steel work for the large bridges is somewhat doubtful, but it is expected that it will arrive during 1916 before the river is too low to prevent boats from reaching the bridge sites. All culverts and bridges have been constructed in cement concrete, and the piers of the larger bridges have in some cases been sunk on caissons or well curbs by opening dredging, in others by means of compressed air, and all piers of the large bridges are being carried down to rock at various depths below the river beds.

As there are no tunnels between this place and Yochow, earthwork is not heavy, except between the Hsinch'iang and Milo Rivers, and in the neighbourhood of Changsha. There are two big crossings at the Hsinch'iang Rivers about 500 and 600 feet each, one at the Milo.

The distance from Yochow station to the Changsha terminus is 85½ miles, being nearly a direct route. Stations are likely to be of a temporary or semi-permanent nature, owing to the necessity for strict economy of funds. None of the places at present touched between the two ports is of any great importance, the market town of Hwangshakai (黃沙街) being the largest, but considerable traffic may be expected at the Milo from the direction of Pingkiang (平江).

The Nanking-Changsha line (寧湘) has been surveyed through, parties of engineers having arrived at the port twice during the year, early in March and again in December. Two routes would appear to be under contemplation, one of which provides for the use of the Changsha-Chuchow (昆株) railway line, which itself is a section of the Canton-Hankow line, as a portion of the projected line, while another scheme suggests the laying of a direct route from Nanchang, in Kiangsi Province, to Changsha, the latter route being considered more suitable. As the loan agreements in connexion with this contemplated railway line had to be postponed on account of the outbreak of hostilities in Europe, no decision has as yet been made in this respect.

Yochow's Customs Commissioner reports that during the year all embankments and cuttings on the Canton-Hankow Railway have been finished for about 60 miles from Wuchang and all bridges and culverts completed for about 50 miles. A large proportion of the remaining earthwork is finished as far as Changsha, and the bridges and culverts are in hand. About 25 miles of rails have been laid from Wuchang southwards, but no public trains are yet running.

The Commissioner at Hankow makes public the following report of Mr. A. G. Cox, engineer-in-chief of the Canton-Hankow Railway, re. progress made during the year 1915:

The purchase of all land required for the line from Wuchang to Changsha—226 miles—was completed during the year. Owing to high floods and exceptionally heavy rainfall, there were numerous delays in earthwork, but very fair progress was maintained through the year. Up to the end of the year 3,824,645 cubic *fang* of earthwork in cutting and embankment were completed, this quantity representing 61 per cent. of the total amount to be done. The monthly output in earthwork has increased at a very satisfactory rate from month to month.

Quite good progress was maintained in the building of bridge abutments and culverts; all masonry and concrete work over the first 36 miles has been completed, and between 40 and 50 per cent. completed on the remainder of the line. The war in Europe has given rise to delay in delivery of the first indent for bridgework, the whole (with exception of two 60-foot spans lost on the s.s. Diomed) have been received, and the steelwork is being erected on the first district from Wuchang. The cost of steel bridgework under contracts let in the latter part of the year shows great increase over former prices.

Track-laying has been seriously delayed, owing to the settlement of an embankment in swampy ground near the 9th mile; the settlement has been slow, and the process of making up and consolidating the bank a tedious one.

The general office, the residences of the managing director and the engineer-in-chief, and all staff quarters were completed during the year and occupied.

"An electric power plant purchased from the I-Kwei (American) section is being erected. In the meantime the quarters are being supplied with electricity from the Wuchang Light and Power Company. During the early part of the year we dispensed with the services of four foreign engineers, owing to the desire to economise. Since then nine have left, the majority of them having gone to the war."

The report from the Commissioner states that regular traffic on the Nan-Hsun Railway connecting Kiukiang with Nanchang, the provincial capital, was opened on the 1st January, 1915, though a large iron bridge at Tukiafow was still under construction. As it has been impossible to obtain the materials necessary for the bridge owing to the war, it has been decided to build a wooden bridge instead, and this, it is expected, will be finished within another three months. The traffic on this line has not been very remunerative so far: the amount collected on freight and passenger traffic averages about $500 per day, though more business is expected when the bridge is completed.

From Nanking the Commissioner reports that the most interesting event in connexion with the port that occurred in the period under review was the opening to trade of the wharves of the Tientsin-Pukow Railway, which event took place on the 1st July. Simultaneously the limits of the harbour were extended to the left bank of the Yangtze to enable vessels to moor at the railway wharves. This Customs office, however, did not reap much direct benefit from the increased facilities thus afforded to shipping till the latter part of the year, when the block of cargo at Pukow became so great that it became necessary to enlist the aid of steamers to carry part of the accumulated cargo.

Up to this time the bulk of the goods arriving from the North had continued to proceed to Shanghai by rail, as previous to the opening of the railway wharves to shipping. It would appear to be more economical for cargo destined for ports beyond Shanghai to be shipped direct to destination from Pukow, instead of being sent by rail to Shanghai and thence shipped to port of destination. In spite of the fact that most of the export business is financed at Shanghai, there are already indications that direct trade between Nanking and coast ports is growing.

Except on the Lung-Ts'in-Yu Hai Railway practically no construction work has been carried out on the railways in this neighbourhood during the year under review. The difficulty of raising loans in foreign countries has been the main obstacle to progress in railway construction. Work has been completely stopped for the time being on the Pu-Hsin Railway, and the work carried out on the Ning-Hsiang Railway has consisted entirely of making surveys of the proposed route. Whether the main line of this railway when completed shall first reach the Yangtze at Nanking or at Wuhu is a matter of great importance to the ports concerned; still more important would the consequence be if this railway found its main outlet to a deep-water harbour through one of the several branch lines which have already been projected to connect with the main line.

The railways already in operation have been doing well, more particularly during the latter part of the year. I have referred above to the accumulation of cargo at the Tientsin-Pukow wharves, which at one time amounted to no less than 40,000 tons. It is estimated that the Shanghai-Nanking Railway carried

from Nanking to Shanghai during November and December more than 50,000 tons of cargo a month, practically all of which was transported under likin control.

The proportion between goods exported by rail and goods exported by steamer to Shanghai may be reckoned as being in the ratio of 7 to 3. Of the imports which arrived from Shanghai, it is estimated that about 70 per cent. were carried by steamers and about 30 per cent. by rail, and that of the rail-borne imports about 40 per cent. were covered by Customs documents.

Chinkiang formerly found itself admirably situated as a trading centre, owing to its proximity to an ideal inland water system, through which cargo could be distributed to, and collected from, many provinces. Progress in the way of railways has, however, been detrimental to the port while benefiting the places of consumption and production, that is to say, Chinkiang has lost the handling of a large part of the trade, while the consumer or producer has benefited, principally by rapidity in transport.

The trade is not lost—it is only lost to Chinkiang. There is no getting away from the fact that Chinkiang is side-tracked. The effect of the above is shown in the value of the trade of the port, which for the past ten years has consistently dropped year by year. The decrease of over 2 million taels in 1914 brings down the net value in 1915 to Hk. Tls. 19,152,585, or 54 per cent. of the 1906 figures. There is, however, a gleam of sunshine.

In September the Grand Canal Conservancy Bureau entered upon a comprehensive scheme of canal improvement, estimated to occupy three years. After that, it is confidently expected that the canal will be found to have a sufficient depth of water in the winter months to enable free traffic during that busy season of the year, and sufficiently stable banks and dikes to prevent the recurrence of the floods of the past, which have devastated from time to time the rich and highly cultivated country through which the canal passes. The work comprises the repairing of dams, the building of additional stone dikes, and the dredging of the shallows between Kwachow and Tsingkiangpu. Four dredgers are employed, and already there are signs of good work being done.

This has been a crying need for some years, for it must be admitted the canal deterioration has greatly assisted the various railways in deflecting trade. There can be no doubt that this and the larger schemes for the conservancy of the canal as a whole, as well as of other inland waterways, will be of immense benefit to the trade of China.

Still, although Chinkiang will undoubtedly benefit, it must not be expected that the effect will necessarily be reflected in that part of the trade that happens to pass through the Maritime Customs at Chinkiang—the improvements will be provincial rather than parochial.

The latest link in the chain of railways, the Lung-Hai, should shortly be ready for goods traffic between Hsuchowfu and Kaifengfu. This is a fine wheat country, where a bumper crop was garnered. In fact it may be generally stated that the harvests in the surrounding country have been the best for many years.

CONDITIONS IN THE PHILIPPINES

[By Harold M. Pitt, President Manila Merchants' Association]

With hemp worth P407.00 per ton, in June, 1916, as against P285.00 in June, 1915; with copra worth P230.00 per ton, as against P165.00; with tobacco worth P503.00 per ton as against P309.00 and sugar worth P122.00 as compared with P102.00, the Islands were able to show an enormous increase in the value of exports and to increase the favorable balance in trade, that amounted to over P23,000,000 for the first five months of the year, to nearly P33,000,000 for the six months comprising the first half of the calendar year 1916.

The Customs record for the month of June was little short of remarkable, both in respect of the value of exports and the great excess of exports over imports.

Copra exports have shown a decided falling off throughout the past twleve months as compared with the twelve months preceding. In May of this year the loss in comparison with May, 1915, amounted to nearly two million pesos. The falling off for the month of June was P935,572.00, and as June showed a gratifying increase over May, in both quantity and value of the copra exported, it may be taken for granted that copra production has made a definite upward turn and that we shall see material improvement as month succeeds month. The manufacture of coconut oil is, of course, absorbing a considerable amount of copra that formerly went into export. The coconut oil exported in June was greater in value by P271,904.00 than for June of last year, but copra is the only item on the list of exports that shows a material decrease for the month.

The increase in the value of hemp exported in June as compared with June, 1915 exceeded the decrease in the value of the copra, but the great increase was recorded by sugar, which jumped from P3,400,000 to P6,494,000. Earlier reports were to the effect that, although the planting for the 1915-16 season was considerably greater than for the preceding year, the continuous rains had made it impossible to mature and cut the cane, and much of it would therefore have to be left in the fields. It was estimated that this loss would about neutralize the increased acreage. These calculations, however, appear to have been discredited, as sugar exports for the first six months of 1916 show an increase over the first six months of 1915 of a little less than 100,000 tons in quantity and of nearly twelve million pesos in value. Taking the figures for the Fiscal Year ending June 30th, a comparison of 1916 with 1915 shows an increase in the amount of sugar exported of 125,000 tons and in value of P14,981,122.00. This suggests that the increase is very largely in the new crop and it is therefore apparent that the planters must have succeeded in harvesting and grinding practically all of the cane planted.

The increase in the value of hemp exported in June over June of last year is accounted for entirely by the increased value of the product. Exports in June, 1915, were 23,239 tons and in June, 1916, but 17,836 tons, showing a falling off of between five and six thousand tons in quantity, although the total value of exports for June of this year was greater by P642,065.00 than for June, 1915.

Knotted hemp and maguey have both recorded a material increase in June over June of last year, and the value of the latter product has advanced in consonance with the increase in the value of hemp.

Exports of leaf tobacco show a falling off in June of P174,182.00 although for the first six months of this year they were greater by P982,654.00 than for the first half of 1915, and for the Fiscal Year ending June 30th the increase was in excess of one million pesos as compared with the Fiscal Year 1915.

In this number of the Review we are publishing Customs reports for June, 1915 and 1916 and reports covering the foreign commerce of the Islands for the Fiscal Year ending June 30, 1916, together with comparisons with the year preceding. The Fiscal Year figures are arrived at by combining the reports of the Bureau of Customs covering the first six months of the present year with the monthly reports from July to December, 1915. We are also reproducing the report of the Internal Revenue returns that are made public by the Bureau of Internal Revenue consisting of a comparative statement of collections during the period January 1st to June 30th of the years 1915 and 1916.

The Customs reports, in so far as they relate to exports, are extremely gratifying and reflect a material increase in the production of many articles, as well as an active market for all that can be produced for export and at satisfactory prices.

The excess of exports over imports for the first six months of the year, is little short of phenomenal, and the wonder is that internal business has not realized more pronounced benefits therefrom.

Importers are still having difficulty in securing supplies and this would naturally affect the consumption of imported articles to a greater or less extent.

The report of the Collector of Internal Revenue shows that there was an increase in collections from the business tax of P827,905.00 for the first six months of 1916 as compared with the same period of 1915. The report covering collections for the first quarter of 1916 showed an increase over 1915 of P671,900.00. The greater increase for the first quarter was due to the fact that the collections during January, February and March of 1915 were for the business done in the last quarter of 1914 when the tax was but one-third of one percent. The comparison of the second quarter of the two years shows an increase for 1916 of P150,000 which would represent a gross business of P15,000,000 on the basis of the one per cent tax. But in 1916 the exemption with regard to exports was abolished. Thus in 1916 the tax included collections on the export business, which would more than account for the increase in business indicated by the increased collections. Also, other lines of business were brought under the merchants' tax provision that did not pay this tax in 1915, but as an offset could be counted the quarterly tax paid by small dealers who are exempt from the percentage tax by reason of the limited amount of their trade, but who, beginning with January 1st, of this year, were made to pay an annual tax in the form of a license, whereas in 1915 a tax was collected from them quarterly. There are many of these small dealers and the aggregate of the quarterly tax formerly paid by them, if figured on the basis of one per cent, would represent a considerable volume of business. This quarterly payment does not appear in collections for the second quarter of 1916 but was included in the collections for the second quarter of 1915.

Tax collections on distilled spirits for the six months of 1916 showed an increase of P266,447.78, whereas for the first quarter of the year it amounted to P278,854.84. This indicates that the collections for the second quarter were P12,407.00 less than for the second quarter of 1915. The reduction in the tax from P.0.35 to P.0.30 per proof liter, would more than account for this loss. The increase in the first quarter was due to distillers holding back on withdrawals at the close of 1915 in order to obtain the advantage of the lower rate that went into effect with the new year. The situation the preceding

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THE FAR EASTERN REVIEW

遠東時報

Engineering
Finance ❋ Commerce

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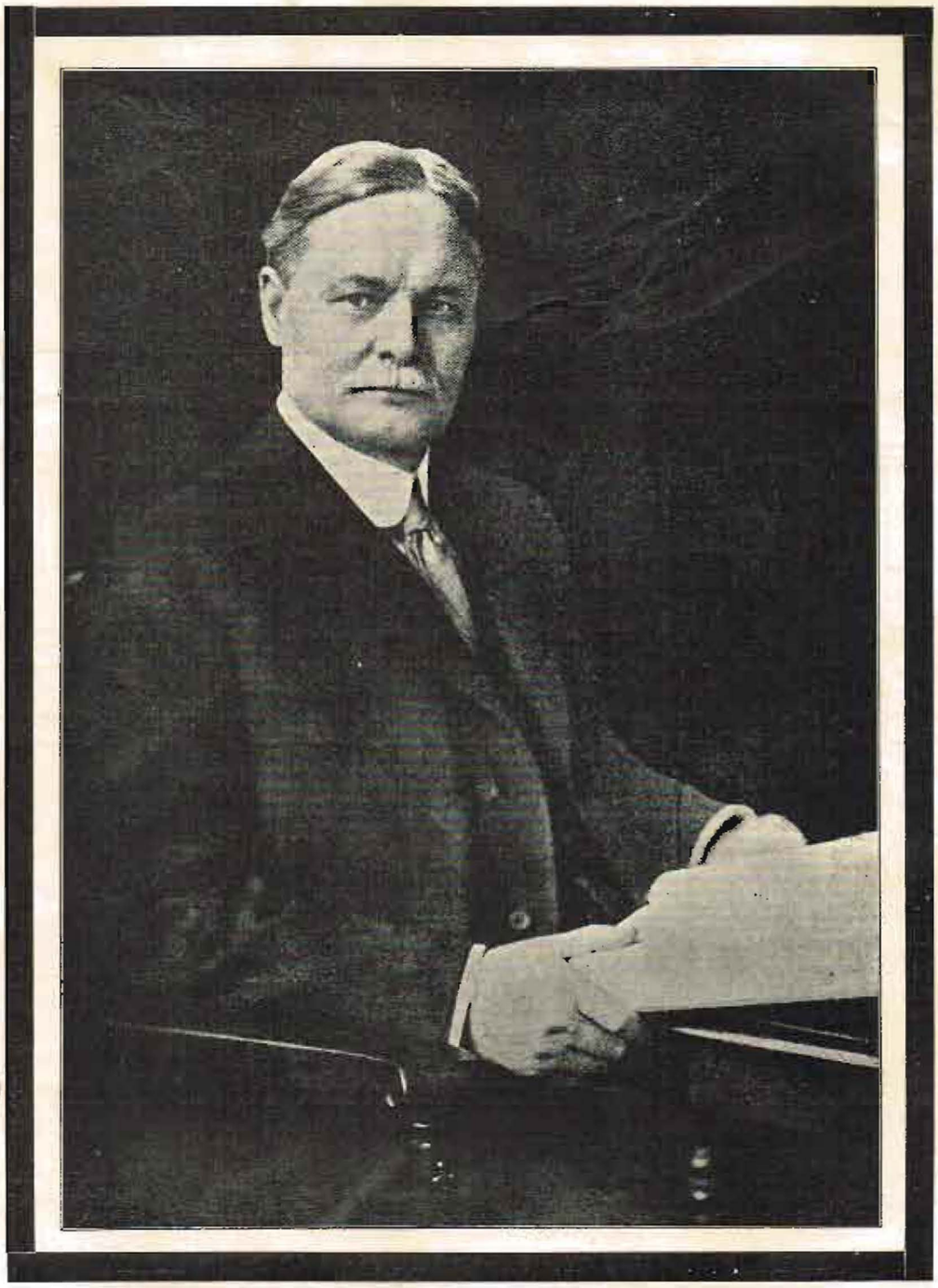


WILLIAM JAMES CALHOUN

AN UNDILUTED AMERICAN DIPLOMAT—FORMER MINISTER TO CHINA, WHO PASSED AWAY, ON SEPTEMBER 19, AT CHICAGO. HE NEEDS NO EULOGY. HIS WORK WILL LIVE. HE WAS LOVED BY ALL WHO KNEW HIM

AMERICAN RAILWAY CONSTRUCTORS BEGIN WORK IN CHINA

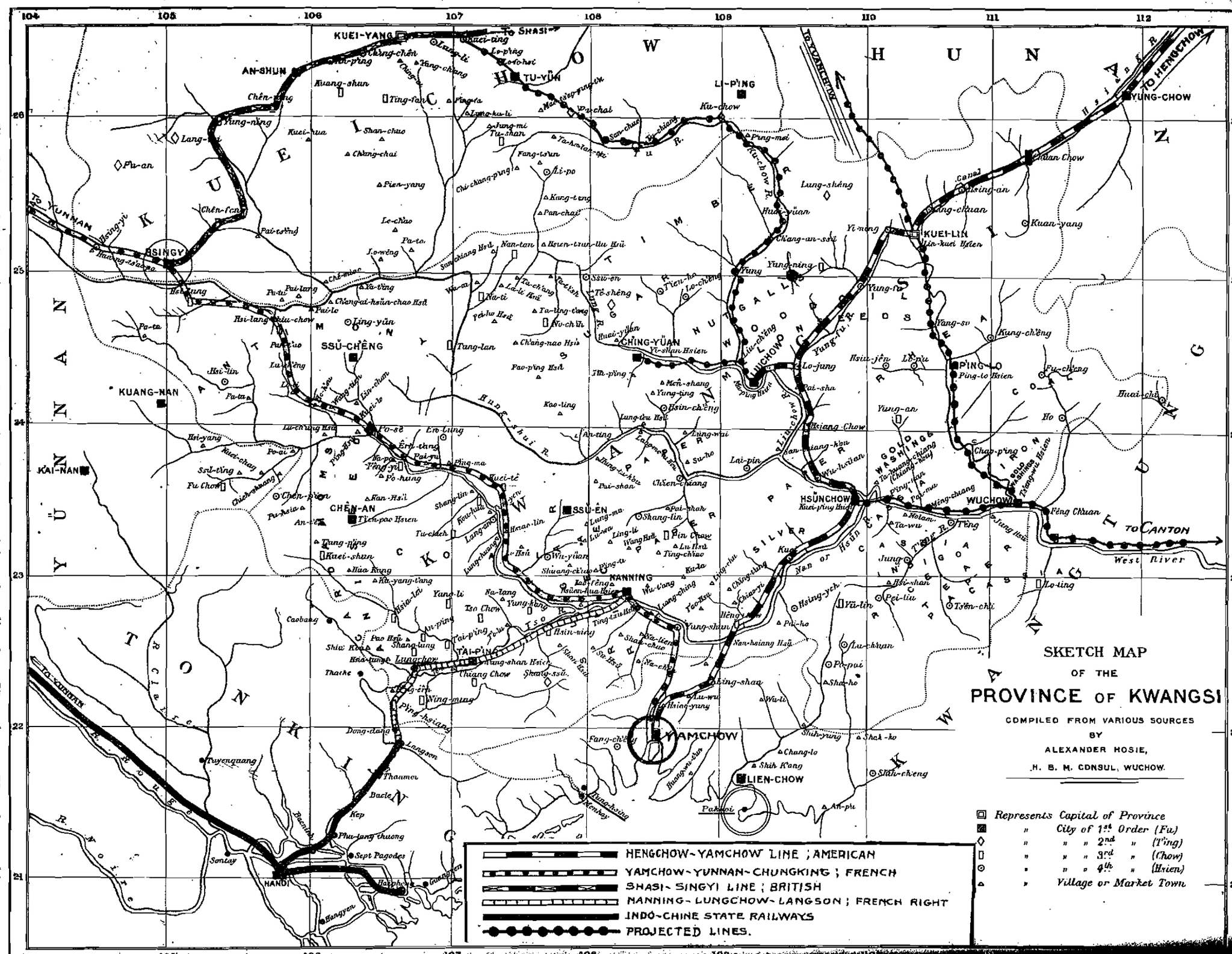
Projected Railway Through Kwangsi Province

In the last issue of the REVIEW we mentioned the signature of a contract for the construction of railways in China by the Chinese Government and the American contracting firm of Siems and Carey. Several routes were proposed in that contract and the one selected for the beginning of operations is the line projected from Hengchowfu in Hunan Province via Yungchowfu and Kweilin to the coast. The southern terminal was originally fixed at Nanning but after consideration the Government decided to have the line carried to the coast, leaving Nanning out of consideration altogether. It is provided that if the survey discloses that the line is not practicable equal mileage will be given elsewhere in China. If the line is eventually built it will cross the West River a considerable distance to the east of Nanning, and will probably touch the coast at Yamchow. As this yet undeveloped port is also the proposed terminal for the projected line from the coast to Nanning and Yunnanfu it should become of some importance in the future. Although Nanning will not be benefited by the line now proposed it will have rail connexion if ever the line projected up the West River valley is built by the management of the Banque Industrielle, who hold the contract to furnish the capital for its construction.

If it is practicable to build this railway, its importance to the development of Kwangsi Province will be apparent to any student of the map of China. So far Kwangsi is accessible only by rivers, and of these the West River is the only really possible one. There is no railway in the province, and no province needs railway communication more if it is properly to be developed. It is sparsely populated, its 77,220 square miles carrying but 5,140,000 people, and its resources, veiled to a great extent by the isolated character of the province, remain undeveloped. There are, it is known, deposits of gold, silver, antimony, lead, iron, tin and coal, the latter being mined by native methods to some extent. Tin is also produced by the natives, is smelted on the spot, and exported in slabs. A smelter for antimony was also opened at Wuchow. A silver deposit of some extent is reported in the Tienying hills, near Kweihsien, through which the projected railway probably will pass. A concession was granted to some Cantonese to mine the area and a company was formed with a capital of $2,000,000

MR. W. F. CAREY

MR. F. C. HITCHCOCK


SKETCH MAP
OF THE
PROVINCE OF KWANGSI
COMPILED FROM VARIOUS SOURCES
BY
ALEXANDER HOSIE,
H. B. M. CONSUL, WUCHOW.
HENGCHOW-YAMCHOW LINE ; AMERICAN
YAMCHOW-YUNNAN-CHUNGKING ; FRENCH
SHASI-SINGYI LINE ; BRITISH
NANNING-LUNGCHOW-LANGSON ; FRENCH RIGHT
INDO-CHINE STATE RAILWAYS
PROJECTED LINES.
Represents Capital of Province
" City of 1st Order (Fu)
" " " 2nd " (T'ing)
" " " 3rd " (Chow)
" " " 4th " (Hsien)
" Village or Market Town
KUEI-YANG
AN-SHUN
TU-YÜN
LI-P'ING
YUNG-CHOW
SINGYI
SSŬ-CHÊNG
KUANG-NAN
KAI-NAN
CHÊN-AN
SSŬ-ÊN
KUEI-LIN
LUCHOW
CHING-YÜAN
P'ING-O
HSIANG CHOW
HSÜNCHOW
WUCHOW
KANNING
TAI-P'IN
LUNGCHOW
YAMCHOW
LIEN-CHOW
HANOI
TO SHASI
TO YUNNAN
TO HENGCHOW
TO CANTON
West River
Red River
Clear R.
Black R.
Nanning or Hsün R.
Yü R.
Hsi R.
Liu R.
Kuei R.
Tso R.
Ming R.
Yung R.
Ta R.
Lung R.
Pai R.
Ho R.
Ku-chow R.
Ta-chiang R.
Hung-shui R.
Yung-ning R.
Lung-shêng
Kuan-yang
Kung-ch'êng
Pu-ch'êng
Huai-chi
Chao-p'ing
Ho
Wu-chuan
Ta-wu
Lo-ting
Tsên-chi
Pei-liu
Yü-lin
Lu-chuan
Po-pai
Shui-ho
Shih-ch'êng
Shih-yung
Fang-ch'êng
Ling-shan
Hsing-yeh
Yung-shan
Nan-hsiang Hsü
Ping-ma
Ping-yüan
Ping-mei
Lai-pin
Wu-hsüan
Yung-an
Yung-ch'êng
Yung-shun
Yung-fu
Yung-ning
Yung-hsing
Yung-ch'uan
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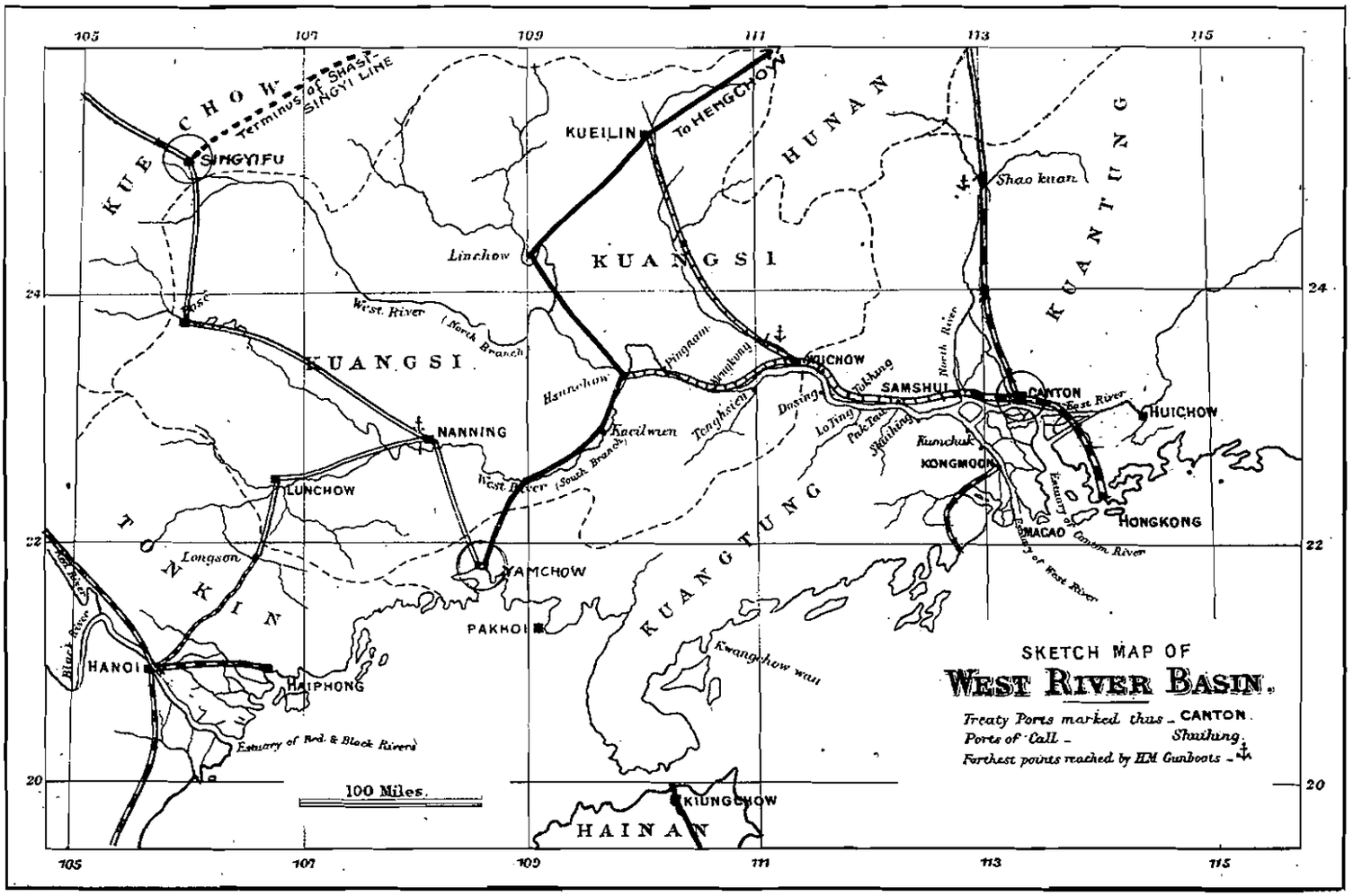
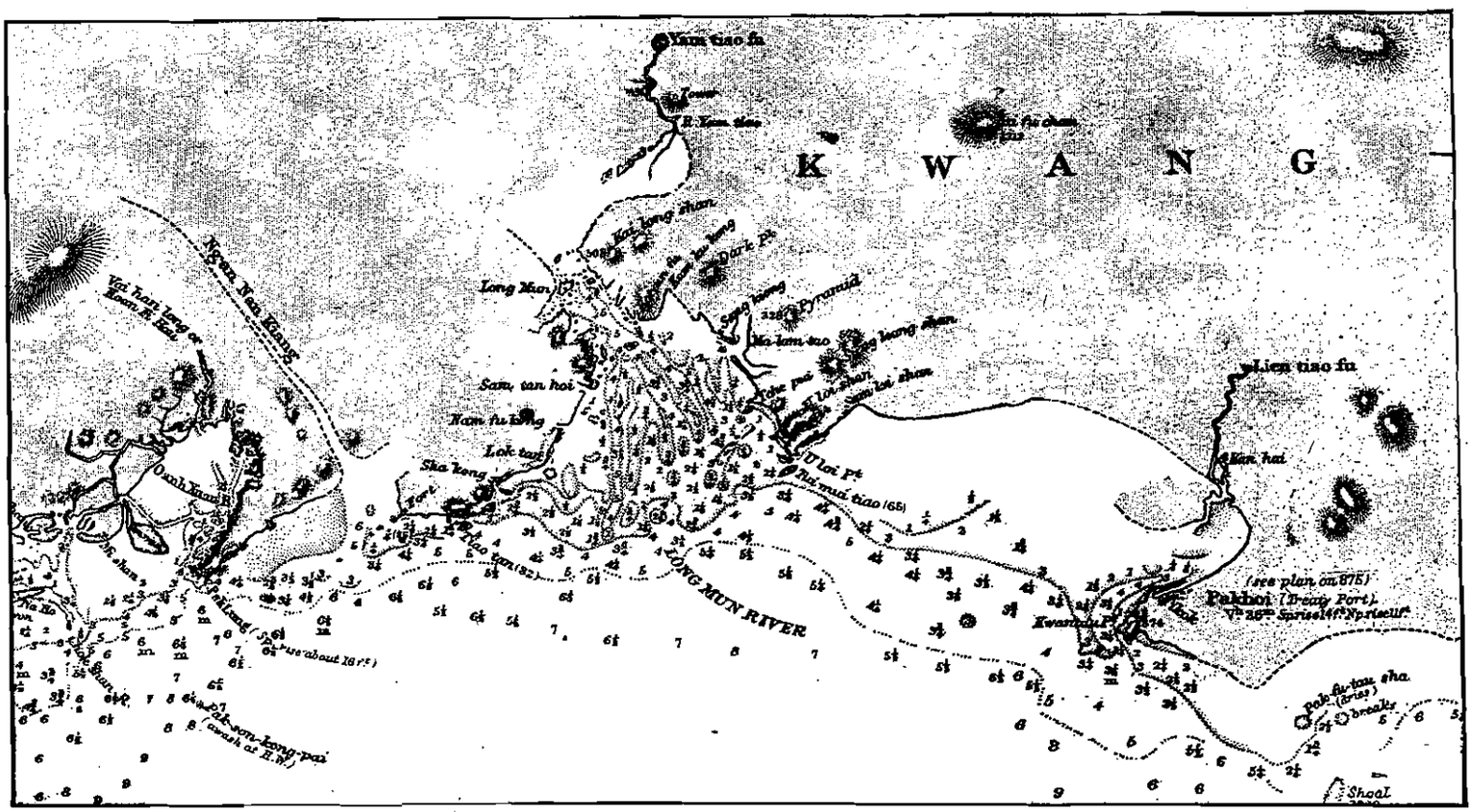


Sketch Map of the West River Basin, showing the relation of the proposed American line from Yamchow to Hengchow, to the great port of Canton.



The Port of Yamchow (Yamtiaofu) showing the depth of the water in fathoms. To make this harbor a proper terminal for two trunk railways, extensive dredging and other works will have to be carried out.

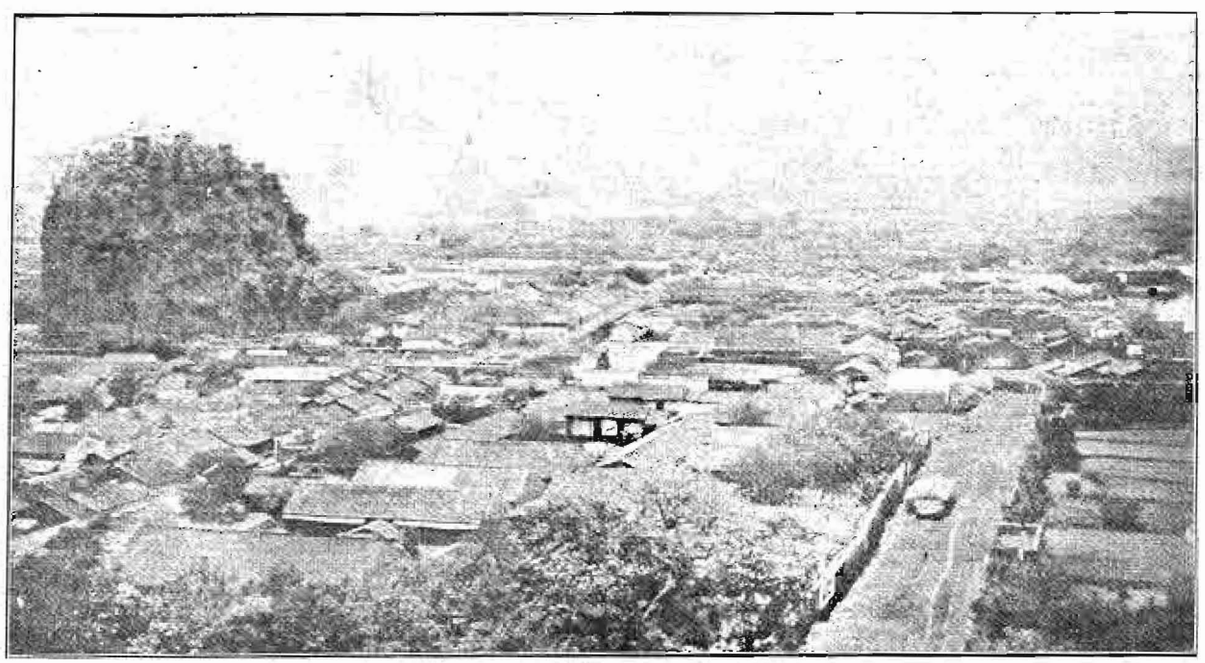
Mexican currency a few years ago. A native mining expert educated in America made a careful inspection of the deposits and reported the existence of no less than twenty veins of silver producing on an average an ore that will clean up ten ounces of silver to each one hundred pounds of ore, and that in addition to the silver there are small deposits of gold, copper and lead. The concessionaires hoped to turn out 100 tons of ore per day, but working reports being unavailable it is impossible to say what development if any has taken place.

In agriculture Kwangsi has the name of being the "granary of Kwangtung," despite the mountainous character of much of the province, rice, wheat, maize, millet, and buckwheat being cultivated in the numerous fertile valleys. The principal natural products are aniseed, camphor, beans, tobacco, rice, indigo, sugar, potatoes, olives, groundnuts, cotton, bamboo, false gambier, cassia, fruit in abundance, silk and corn. There are forests of maple, ebony, teak, and other timbers, which have been worked by the natives, rafts being floated down the streams as far as Canton.

Mr. Geo. A. Kyle, the Chief-Engineer for the railways to be built under the Siems & Carey contract, arrived in Peking on November 20 with Messrs. Carroll and Sullivan, two of his assistant engineers. The first survey party left during the latter part of November and accompanying it were Mr. F. C. Hitchcock, the Vice-President and General Manager of the Siems-Carey Railway & Canal Company. It is thought that some three to four months at least will be taken in making the reconnaissance of this line before a detailed survey is undertaken.

This railway will link up the present systems in China with the South-west, and through rail connection with Peking, Shanghai and Hankow from Kwangsi will prove of immense value to the Peking Government in administering the hitherto inaccessible South-west.

The American International Corporation and the Siems-Carey Railway & Canal Co., have persuaded the members of their respective organizations that only the very best ability be selected for work here. Mr. W. F. Carey, who is well known



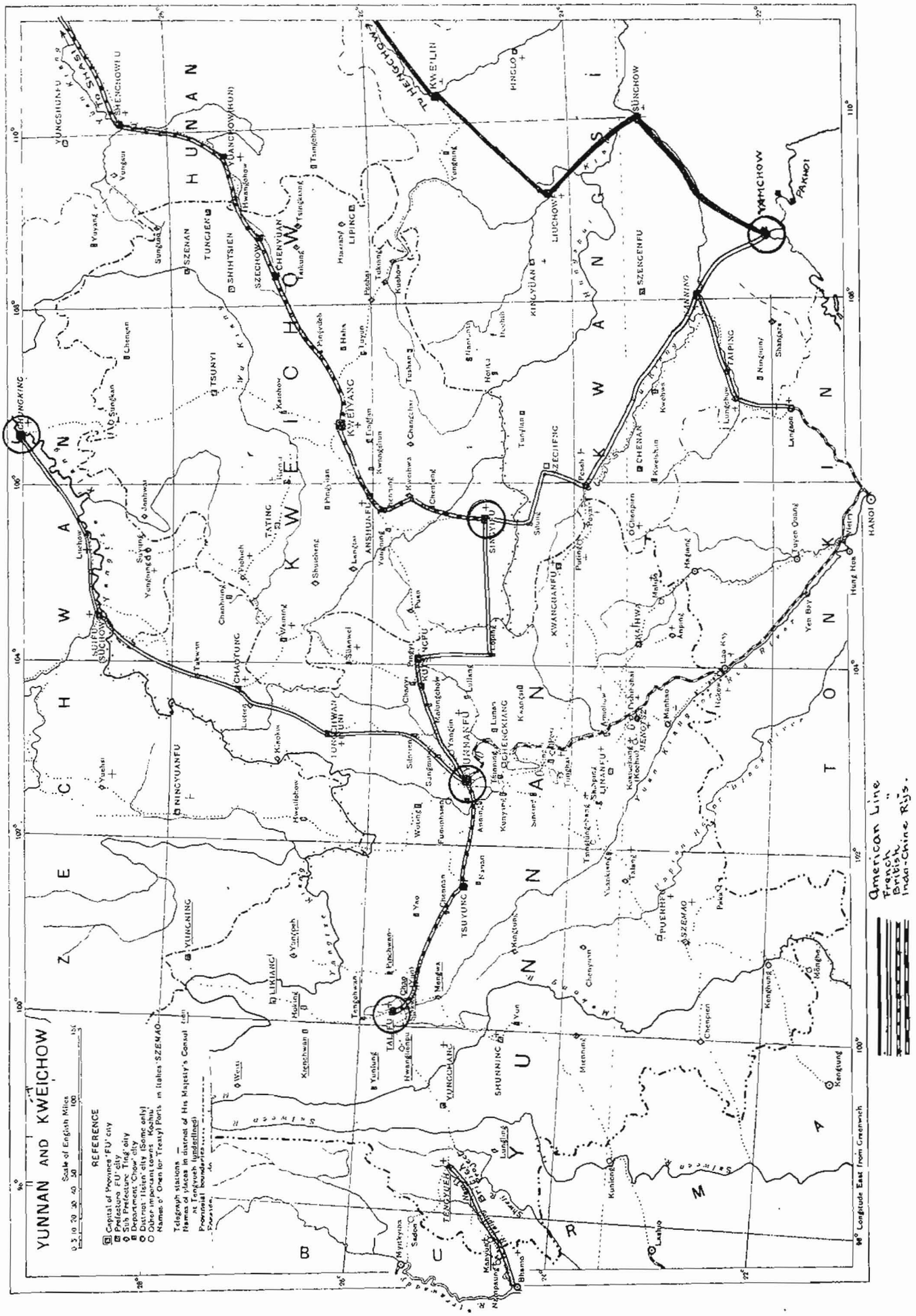
THE CITY OF KWEILIN, THE PROVINCIAL CAPITAL OF KWANGSI. ON THE LINE OF THE PROPOSED HENGCHOW-YAMCHOW RAILWAY

Manufactories are conspicuous by their absence, though the natives make paper, leather, firecrackers, and fireworks, joss sticks, iron pans, crockery, and finished products from the produce of the soil. Imports comprise cotton piece goods, cotton yarn, woollen goods, cotton and woollen mixtures, silk piece goods, raw cotton, metals, coal, cigarettes, aniline dyes, enamelled ware, flour, ginseng, window glass, hosiery, lamps and lamp ware, matches, condensed milk, needles, kerosene, india rubber boots and shoes, soap, umbrellas, umbrella frames and parts, alum, beche-de-mer, straw mats, medicines, etc. The southern part of Kwangsi is distinctly tropical, while the north is cooler, with sudden changes of temperature.

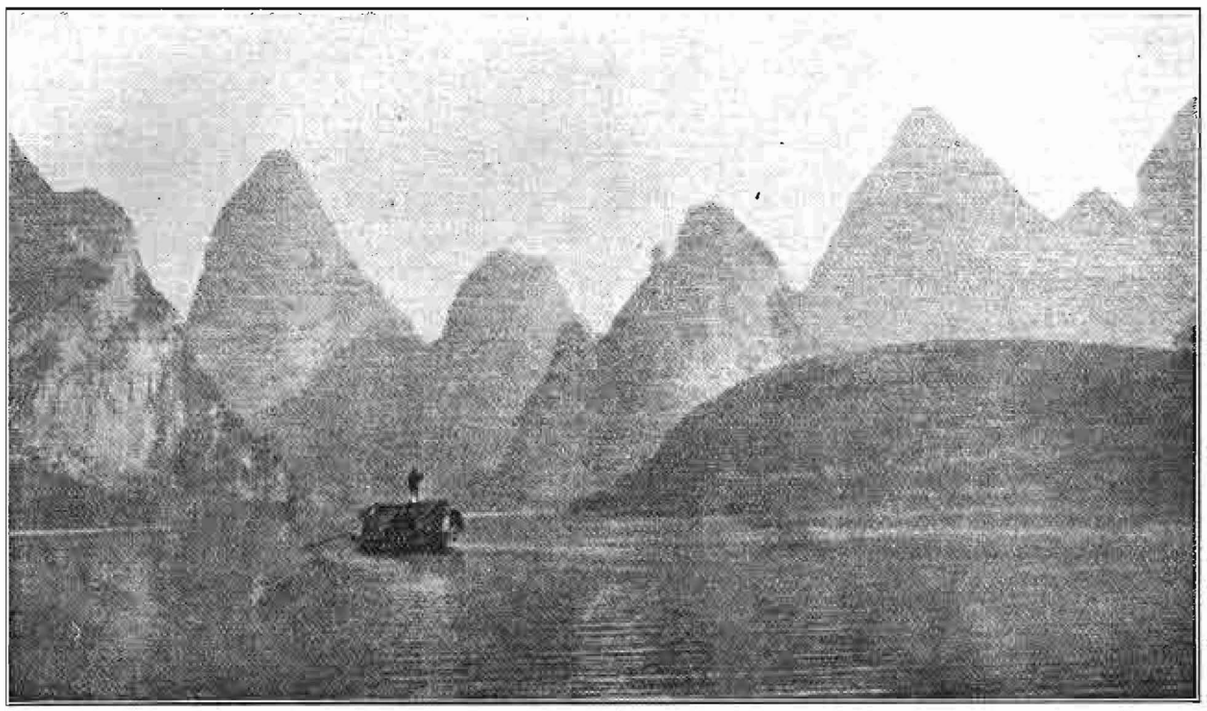
The city of Kweilin, the first large city which the proposed line will touch in Kwangsi province, is built in beautiful surroundings and is highly regarded by the natives as a place of residence. It has a population of some 80,000, but not being a Treaty Port where foreigners may trade little has been done to develop the place commercially. The chief commercial centres are on the West River, but with the opening of the province by railways there is sure to be considerable activity commercially and industrially, lack of communication being the chief cause for backwardness in this respect. Given communication the enterprising Cantonese from the adjoining province of Kwangtung will increase greatly and contribute largely to the economical advancement of the province.

for his work in the construction world and who is one of the senior partners in the contracting firm of Siems & Carey, of St. Paul, came to China last year to look into conditions here. After a very close study of the situation he succeeded in arranging for a commercial contract with the Chinese Government for the building of the railroads mentioned in the last issue of the FAR EASTERN REVIEW, and also the conservation of the Grand Canal. Upon the reports of Mr. Carey the New York financiers readily placed at the disposal of the Chinese Government a sum necessary for investigation of the lines contemplated by this contract, and took the option for building 2,600 miles of railroad. Mr. Carey went to New York in May of this year and, with his partner Mr. Siems, discussed for two months in detail with the New York financiers not only the contracts which he had secured, but also the great opportunities for development of industries in China along all lines. Mr. Carey impressed upon his associates the need of sending only first class men to China, and the United States was scoured to secure that ability which would do credit to the name of America in the Far East.

Mr. Siems and Mr. Carey were ably assisted by Mr. Willard D. Straight in their discussions concerning China as a field for American investment. Mr. Carey will as President of the Siems-Carey Railway & Canal Co., have direct supervision of the work of this Corporation in China. Mr. F. C. Hitchcock, the Vice-



Showing the relation of the proposed American line to the other lines and projects of South Western China.



Below Yangseh, Cassia River, Kwangsi—Between Wuchow and Kweilin

President and General Manager, will in the absence of Mr. Carey have charge in China of the interests of the Corporation. Mr. Hitchcock is taking a keen interest in the contemplated railways, and will accompany the survey party going out on the Chuching line.

It is very significant that the majority of engineers to be employed upon this line will be Chinese and that these men have been in many instances recommended to the Chinese Government by the Siems-Carey Railway & Canal Co. Mr. Hitchcock is extremely pleased to find that China has so many competent young engineers, and he predicts that the future of Chinese railroads can be easily left in the care of the present young engineers, who, after a few more years of experience, will be able to build China's railways.

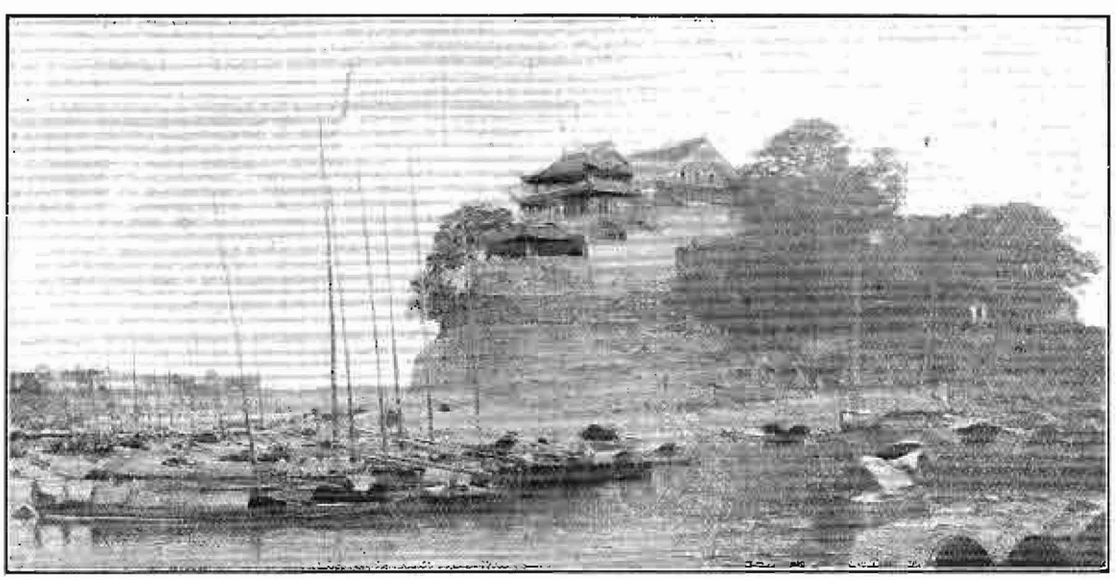
Director-General Sun of the Chuching Railway, is a graduate of Cornell University and had charge of the Ninghsing Railway and was for a while Managing-Director of the Shanghai-Nanking Railway. Mr. Sun is a most competent young Chinese, and is a man of great influence in Peking. He is very thorough and competent in his work, and is doing everything in his power to expedite the construction of this line.

Mr. Harry A. Arthur, the Assistant Secretary and Treasurer of the Siems-Carey Railway & Canal Co., is also in Peking, and this gentleman has had considerable training in the United States and South America with the firm of Stone & Webster. Mr. Arthur is a young man of wide experience who is especially interested in foreign fields and comes to China with a brilliant record for a man of his age.

Mr. L. J. Buckner has been appointed Chief Auditor by the Chinese Government, and this gentleman has had some twenty years of experience with engineering and construction accounts, having been connected for many years with the firm of Winston & Bros., of St. Paul.

Messrs. Arthur and Buckner have been agreeably surprised and pleased with the system of accounting as adopted by the Chinese Government. The work of Dr. Henry C. Adams in the systemizing of railway accounting, having been ably assisted by Dr. C. C. Wang of the Ministry of Communications, will do a great deal towards the efficient management of the present railways as well as all future lines to be constructed.

Because of the great interest shown by Americans at present in investments in China, the China Corporation has been



Shihku College, Hengshan District, Yungchow, Honan Province

formed with the purpose of developing large industrial enterprises here. The President of this Corporation is Mr. Willard D. Straight and the Vice-President and General Manager, Mr. W. F. Carey. It is the purpose of this organization to set to work immediately to interest American investors in various commercial and industrial enterprises. We hope in a future issue of the FAR EASTERN REVIEW to be able to give our readers more information in regard to this Corporation.

Mr. George A. Kyle, the Chief Engineer of the Chuchow-Chinchow railway, as it is officially called, is 59 years of age. He was educated at Lebanon University, Ohio, U S. A., and began work as chainman in 1876. He remained one year on railroad work but relinquished it to go through college, subsequently resuming his chosen career and filling all the minor positions on an engineer corps during the intervening years to 1882. From then to 1888 he was engaged as a division engineer in charge of location and construction of railroads in the States of Ohio, Illinois, Indiana, Iowa and Minnesota, including 100 miles of railroad for the Chicago and Great Western between St. Paul, Minnesota, and Chicago, Illinois. During 1888 and 1889 he was in charge of location for the Union Pacific Railroad Company in Wyoming, Nevada, and California on their proposed extension to the Pacific Coast from Ogden, Utah, to San Francisco, through the Sierra Mountains, which entailed

MR. GEORGE A. KYLE

some very heavy and costly work. From 1889 to 1894 he was engaged in location and construction of railways for the Northern Pacific Railway Co. as Locating and Division Engineer on several hundred miles of heavy mountain work in Washington, Oregon and Idaho. From 1894 to 1895 he was engaged by the Baltimore and Ohio Railway Co. on maintenance of way between Cincinnati, Ohio, and St. Louis, Missouri. From 1895 to 1898 he was engaged in South Africa on the Simmer and Jack Gold Mine, one of Cecil Rhodes' gold mines, under John Hays Hammond, in charge of installation of the surface improvements such as the stamp mill, cyanide works, head gears and 25 miles of railroad which cost $15,000,000, and in developing the deep level shafts from 3,000 to 4,000 feet deep. From 1899 to 1902 Mr. Kyle was with the Northern Pacific Railway on location, construction and maintenance of way in Washington, Oregon, Montana, Idaho and Canada, which included most heavy mountain work. From 1902 to 1904 inclusive he was on the Grand Trunk Pacific Railway in Canada and employed thirty engineering parties on about 2,000 miles of the line from Lake Superior to the Rocky Mountains.

From 1904 to 1905 he was with the Northern Pacific Railway on location and construction and special work. From 1905 to 1907 he was engaged in Alaska, U. S. A., on the Alaska Central Railway, in charge of the location of 500 miles of railway from Seward to Fairbanks and constructed over 70 miles which was taken over by the United States Government about 18 months ago. From 1907 to 1910 he was assistant Chief of the Chicago-Milwaukee Railway on their extension to the Pacific Coast from Butte Mountain west, including about 800 miles of main line and 300 miles of branches. From 1910 to 1912 he was Chief Engineer and General Manager of the Oregon Trunk Railway in Oregon and built 160 miles of line when work stopped on account of financial difficulties. The work included a bridge across the Columbia River 3,000 feet long and some very difficult and expensive work. From 1912 to 1916 he was consulting engineer on railroad, irrigation, and general engineering work, until engaged by the Republic of China to take up the position he has now come to fill.

Mr. Frederick C. Hitchcock, Vice-President and General Manager of the Siems-Carey Railway and Canal Company, was born in 1864, his father, Mr B. H. Hitchcock, of Ohio, being a distinguished civil engineer of established reputation in America. Having served his apprenticeship in the engineering department of the Toledo and Ohio Central Railroad for four years, Mr. Frederick Hitchcock became Divisional Engineer on construction on the Duluth South Shore and Atlantic Railroad. He was later Divisional Engineer on the New York, Ontario, and Western Railroad, and from 1890 to 1893 was Divisional Engineer in charge of 100 miles of construction on the Norfolk and Western Railroad in Virginia. In 1893 he became Chief Engineer and General Manager for and afterwards partner in the firm of George S. Good and Co. of Pennsylvania, and remained with them for thirteen years. This was a large contracting firm who built over 2,000 miles of railroad during the time that Mr. Hitchcock was with them. Among others were the Choctaw, Oklahoma and Gulf Railroad, the El Paso and South Western Railroad, over 600 miles long; branches for the Pennsylvania Railroad, a considerable portion of the Beech Creek Railroad; a portion of the Chicago, Rock Island and Pacific Railroad; portion of the San Francisco Railroad, and had contracts on the Baltimore and Ohio, as well as important contracts for various improvements of cities, including Washington, Philadelphia and Boston. In 1906 Mr. Hitchcock became Chief Engineer of the National Railroads of Bolivia, South America, and when the construction began was made General Manager of the South American Construction Company which built these lines. In 1908 he was elected Vice-President and General Manager of MacArthur Bros. Company, (and officer in all their allied companies), the oldest and largest contracting firm, and one which has done more contracting work than any other single firm in the United States, it having been organised in 1826. While connected with this company the Ashoken dam was built for the new water supply of the city of New York, as well as ten miles of tunnels in connection with the same system, the whole contract amounting to $22,000,000 gold. The contract for the dam was probably the largest single contract ever let in competition in the United States. The firm also built the dam at Katonah for the New York water supply, the Nederland dam in Colorado and the dam for the Alabama Power Company in Alabama. The locks at Sault Sainte Marie were also built for the United States Government, as well as the shiplock at Buffalo (N.Y.), the Sun River irrigation project, Montana; a large portion of the Fort Laramie irrigation project in Wyoming, as well as other government contracts and work for many cities. The railroad work undertaken during Mr. Hitchcock's management was enormous and included wholly or in part the lines of the following railroad companies: The Tidewater of Virginia; the Big Four; the Southern; the New York Central; the Milwaukee Central; the South and Western; the Gilmore and Pittsburg; the Burlington; the Lehigh and New England; the El Paso and South Western; the Inspiration Copper Co.; the Southern Pacific; the Kettle Valley, in British Columbia, as well as others. MacArthur Bros. were also active in foreign fields and built the Pan-American Railroad in Uruguay, as well as work in other regions. Mr. Hitchcock was Vice-President of MacArthur, Perks and Co, the firm being composed of MacArthur Brothers Company and Sir Robert Perks, of London. This firm built the docks at Havana, Cuba; dredged the harbor of Havana, and built the Coos Bay Railroad for the Southern Pacific railway in Oregon. Mr. Hitchcock resigned from the

following companies to become associated with Messrs. Siems and Carey: Vice-President and General Manager of MacArthur Bros. Co., Vice-President of MacArthur, Perks and Co., President of the United States Equipment Co., Vice-President and General Manager of MacArthur Concrete Pile and Construction Company, Vice-President of the Construction and Engineering Finance Co., and President of the Durax Paving Company.

A Supplementary Contract

Towards the end of October the Minister of Communications forwarded the following petition to the President in connexion with the American agreement:

"On the 27th day of the 6th month of this year, the late Minister Tsao Ju-lin contracted a loan from an American firm called 'Yu-chung Co.' for the purpose of the construction of railways; and when I took over charge of the affairs of the Ministry I re-submitted the loan contract with comments and notes to the Government for further consideration. I received an instruction from the President to the effect that as the contract was passed by the Cabinet some time ago, it was unnecessary to make any revision, but should be enforced. However, I noticed that there were many ambiguous points, which should be revised before enforcement. In accordance with the provisions made in article 17, both parties may suggest any amendments whenever they think necessary; therefore, I informed the Company and the American Minister that before coming into force a revision should be made on the terms of the contract. The lenders at first refused to make any amendments, but later on they complied with my requests. After holding several conferences to discuss the matter, a supplementary contract containing seven articles was signed which are as follow:—

"(1) The length of the proposed railway has been reduced. In the original contract it is fixed that the line to be constructed shall be 1,500 English miles, and that the direction and locality of this line are to be fixed later on. As we have signed railway loans with other foreign firms, it is feared that the line may be too long, thus interfering with other lines of construction. We have now revised this article and made it 1,100 English miles long. (2) We have reduced the compensation. According to the original contract, the lenders shall be entitled to 25% of the proceeds of the profits of the railway. It has now been reduced to 20%. (3) Details on the issue of bonds, and the making of advances of the proceeds of the loan have been provided for, because in the original agreement nothing has been referred to regarding the above subjects. (4) Rules have been made for the employment of foreign secretaries in the Three Departments of the railway and other members of the staff, and their contracts and salaries have been definitely fixed in order to avoid future troubles. (5) The management of the railway, such as book-keeping, etc., should follow the provisions made in the laws and mandates of the country, so that there will be uniformity with other Government railways. (7) One year after the survey is completed for the construction, the proceeds of the loan should be handed over or advances made, otherwise the contract will become null and void.

"On the 29th day of the 9th month this supplementary contract was signed and put into force. It must be mentioned that during the time of the late President, an advance of Gold $500,000 was made and deposited in the American Bank for the expenses of survey, and the money is still in the Bank. There is not any other advances."

President's Rescript: "Let the Cabinet take note of this memorial."

VALUE OF JAPANESE SEA-WEED

In Europe only a small part of Ireland is undertaking the cultivation of sea-weed at present, but the method used there is very crude and primitive. The scientists of Europe have been advising their fishermen to follow the example of Japanese fishermen and produce sea-weed which is more valuable than the average person believes. Sloak cultivated in Tokyo Bay amounts to two million yen a year, and the total product of sloak of the country is three million yen. Laminaria is cultivated in Hokkaido, and its yearly product reaches two million yen, and a half of that amount is exported to China. The export of isinglass is also half a million yen. The total export of all sea-weed and products from sea-weed will amount to ten million yen a year.

It is Dr. Yendo's opinion that among the sea-weed growing on the coast of Japan there is none which is not yet utilized for some purpose or other. Those which are left untouched are such sea-weed as could never be used for food or other purposes. In using sea-weed for fertilizer and glue, Japan leads all other nations, and gloiopeltis furacata is the chief weed used for the manufacture of glue. This glue is widely used by the silk and cotton weavers of all nations. Although the Japanese fishermen understand sea-weed thoroughly and utilize it in many ways, they have not yet learned to utilize it for chemical industries. In this respect, Dr. Yendo states, Japan is far behind other nations.

The coast of Hokkaido is famous for the abundant growth of laminaria, the material for iodine, and naturally the iodine manufacturing industry should develop in Hokkaido. But the iodine manufacturing industry of Hokkaido is still in a state of infancy and its annual product is only thirty thousand yen. All factories established in Hokkaido for making iodine are small, and the method used is crude, and they are wasting from one third to one half of iodine in the weed. The people of Hokkaido have good knowledge of laminaria itself, but they lack the knowledge of the chemical process to take iodine from the weeds, and so a large amount of iodine in the weed is wasted in smoke. Dr. Yendo calculates that every year three million yen is wasted in the smoke of iodine. However, such crude iodine made at Hokkaido is all exported to the United States, and there is a good market for the iodine in even far larger quantities than is made in Hokkaido. Not only for iodine, but for many other chemical purposes, sea-weed could be used, but at present those interested in sea-weed do not have enough knowledge to utilize them.

The use of sea-weed for food and glue, the Japanese learned from the Chinese, but the present way of utilising it was all originated by Japanese fishermen. The reason why the iodine manufacturing industry does not progress in Japan, Dr. Yendo says, is because the people have not tried to improve the present method. In the method of making iodine from sea-weed, we have no example to follow, and the Japanese fishermen and also scientists should study the problem and find methods suitable for the industry.

It was formerly the habit of Japanese scientists and businessmen to follow the system and examples of foreign countries, but in this field, they have not found any example. That is probably the reason why they have not given any thought to the matter. Another matter which is preventing the development of the iodine industry is the enforcement of the Salt Law which prohibits the private use of salt which is a by-product of iodine. At present iodine manufacturers are compelled to throw away valuable by-products on account of the Salt Monopoly Law.

There is a good field for development for any industry utilising sea-weed, and it is the advice of Dr. Yendo to the scientists of Japan to make investigations into the possible fields of utilizing sea-weed which is so abundant in every part of the country. By the proper methods, the income from sea-weed could be easily made to produce a tremendous amount. All told, the sea-weed is only yielding ten million yen a year. The two million export of sea-weed and its product could be doubled by a little improvement by the manufacturers. The crude iodine which is exported to the United States and imported to Japan as refined iodine could be easily produced as refined iodine if the Japanese scientists gave a little thought to the subject.

Dr. Yendo concludes with the prediction that out of sea-weed, Japan can obtain a large amount of income, and there is no other country to compete with Japan in this field. Not only other countries have not sufficient sea-weed, but historically, they are not acquainted with it.

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THE FAR EASTERN REVIEW

遠東時報

Engineering
Finance ❋ Commerce

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Vol. XIII., No. 7. ❋ SHANGHAI—MANILA ❋ December, 1916.

Should America Co-operate with Japan in China

The Hotchpotch of Chinese Politics

Shanghai's New Junction Line

New Department Store and Hotel

China's Salt Revenue

Canton-Kowloon Railway Report

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THE FAR EASTERN REVIEW

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VOL. XIII. SHANGHAI, DECEMBER, 1916 No. 7

NEW JUNCTION LINE AT SHANGHAI

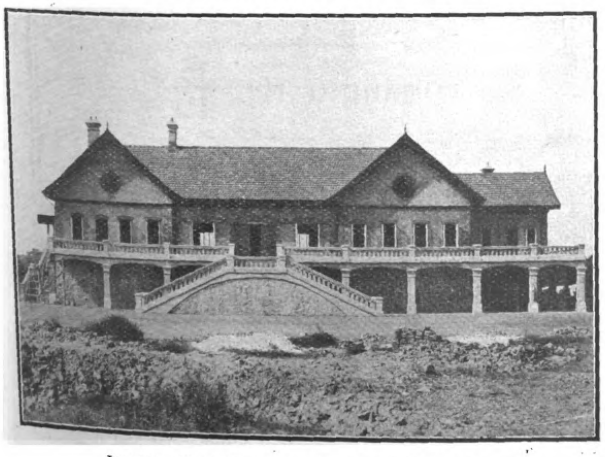
The linking of the northern railway system of China with that of the Shanghai-Hangchow-Ningpo line was inaugurated on December 9 when the first train travelled over the junction line between the Shanghai-Nanking Railway and the Shanghai-Hangchow-Ningpo Railway, a line over ten miles long which has just been completed. Trains left Shanghai North and South and took the guests over the line. The various stations—terminii and intermediate—were decorated with flags of China and the Allied Powers while the locomotive which drew the large train out of Shanghai North carried the Chinese and British flags crossed in front. The inspection of the route having been made the guests were conducted to a large mat shed erected outside Jessfield Station, the most imposing of the stations on the line, where an excellent tiffin was served to about 300 including representatives of the foreign commercial community and a large number of Chinese merchants. There were present Messrs. C. G. S. Mackie, C. Rousse, T. H. U. Aldridge, C. H. Godfrey, Chung Mun-yew, A. C. Clear, Engineer-in-Chief of the line, D. P. Griffiths, Tsao Huang, representative of the Ministry of Communications, Col. Chao, representative of Gen. Yang Shen-teh, the City Magistrate, President of the Chinese General Chamber of Commerce, a representative of the Vice-President, a representative of the Governor at Hangchow and one of the Tuchun of Chekiang.

Tiffin was served at a series of tables which had been arranged with excellent taste by the ladies of the railway, the floral decorations being of poinsettias, the red and green of which were the railway's colours.

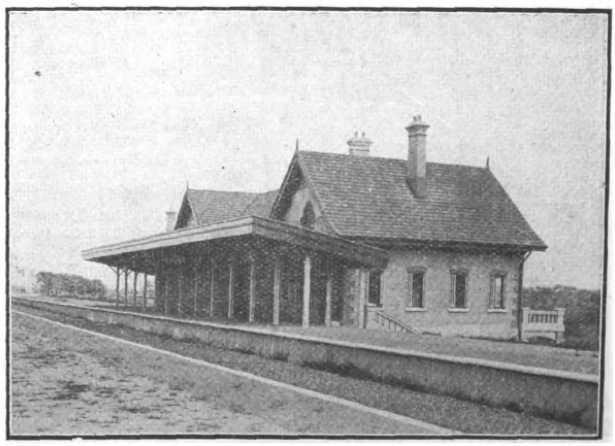
Mr. Chung Mun-yew, who acted as toast-master, stated that a telegram had been received from the Ministry of Communications expressing gratification at the completion of the work and congratulating the management on the way in which the work had been carried out. Mr. Chung Mun-yew then said:—"It appeared at one time as though Hangchow and Nanking would never be connected up with metals, because of the strong opposition exerted by the powerful gentry of these two great provinces against Government control of the entire line of railway, although the Central Government had for years built and owned the section from Nanking to Shanghai and the provincial gentry that portion from Shanghai to Hangchow, the two being separated by a small gap only. By steadily keeping the object in view and after years of patient waiting and diplomacy the Central Government finally triumphed and the public as well as the Government will benefit by the new order of things. And thanks to the high class technical skill brought into play, resulting in the ocular demonstration to which we have been treated to-day, the dream has become a reality. The technical staff, under the wise leadership of our Engineer-in-Chief, may well feel gratified with the result not only from a technical point of view but on the score of economy."

The various representatives present then addressed the meeting in Chinese, offering the congratulations of their principals upon the completion of the line, and Mr. Chung then called upon Mr. Mackie, as representing the foreign commercial interest, in Shanghai, to say a few words. Mr. Mackie said in part:—

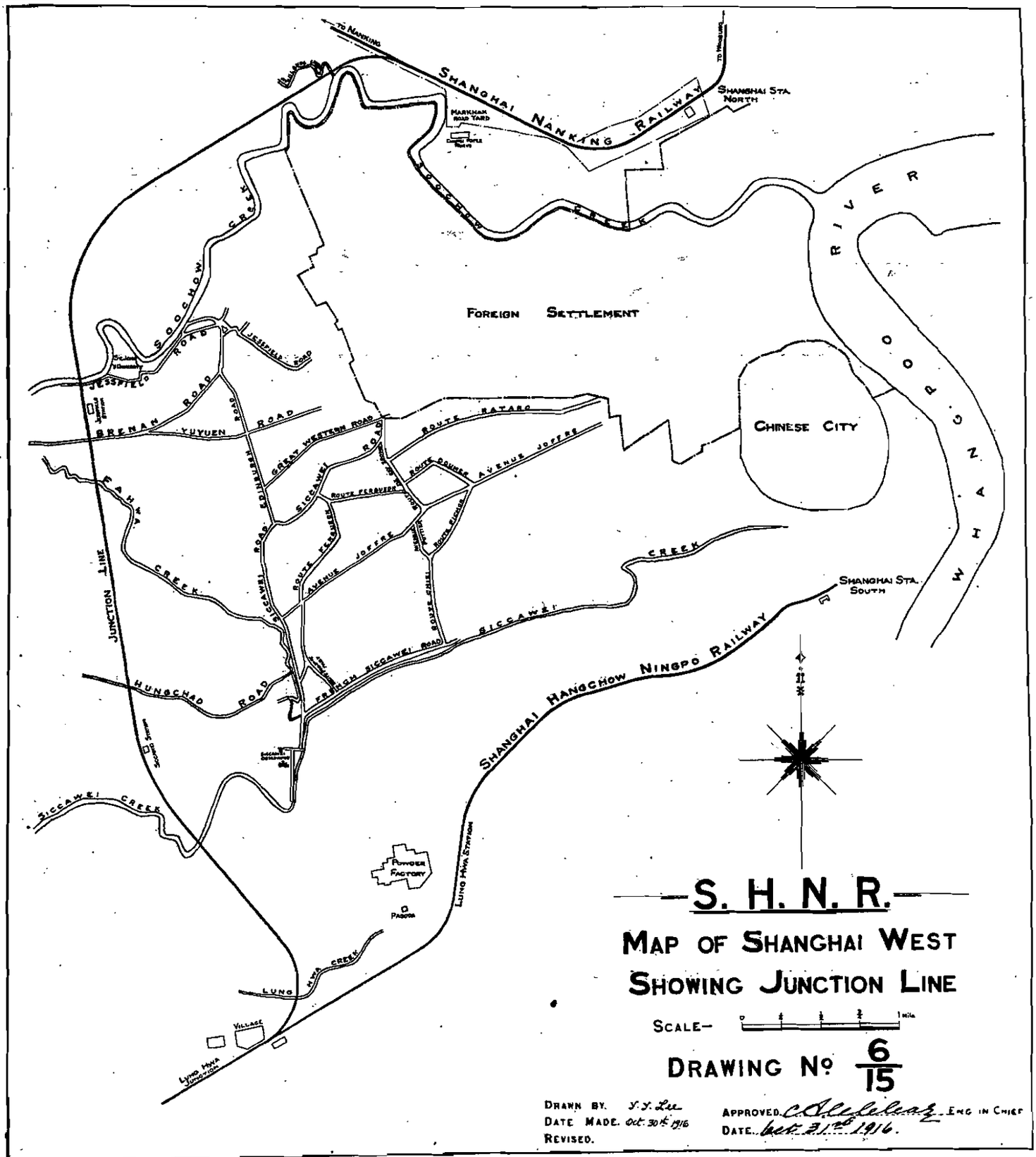
"This line, the formal opening of which we now celebrate, forms a short but none the less important link between two railways, the value of which to the Chinese Empire is probably as yet but dimly realized.



JESSFIELD ROAD STATION FROM ROAD APPROACHES



JESSFIELD STATION, SHOWING TRAIN PLATFORM



Map Showing the Junction Line which connects the Shanghai-Nanking and the Shanghai-Hangchow-Ningpo Lines of the Chinese Railway System, giving a through track from Mukden to Hangchow

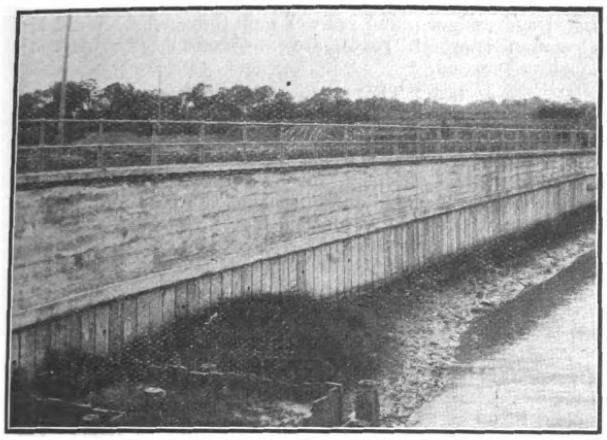
"That it will prove of immense benefit in allowing for the quick and easy transport of goods destined from one railway to the other goes without saying and I have to congratulate the executive on pushing the line through in spite of the many difficulties they have had to contend with. In conclusion, gentlemen, permit me on behalf of your guests to wish this new addition to China's growing railway system all the success that a progressive policy deserves."

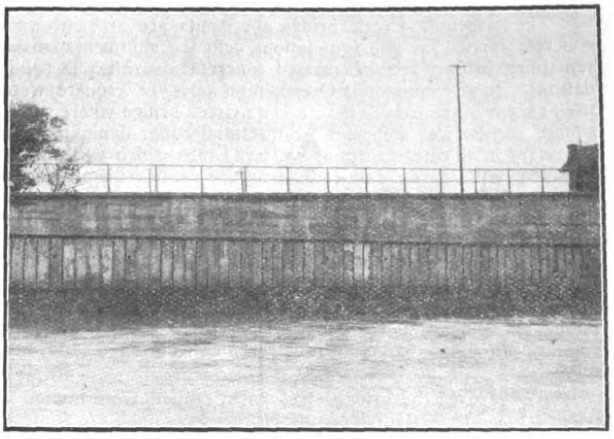
Mr. A. C. Clear said:—

"The building of this line has been attended with no very great engineering difficulties beyond the ever present one of foundations, but we now have sufficient experience of the treacherous nature of the soil in this part of the country to feel secure in the precautions that have been taken.

"These 10½ miles of railway form a fairly complete example of railway building in general, and have proved an excellent object lesson to our Chinese student engineers. Good, substantial and economical work has been insisted upon throughout. Thus only is that first essential of a railway's requirements obtained, that which should be summed up in the one word—safety.

"There is a great future before Shanghai, gentlemen, already it is far and away the most important commercial and industrial centre of China, and when this present terrible period of war has passed, and peace once more reigns throughout the world, we all hope that prosperity will go hand-in-hand with it. It cannot then be long before those prophecies to which I have on several occasions given utterance are fulfilled, and we shall see





BUNDING FOR SOOCHOW CREEK BRIDGE

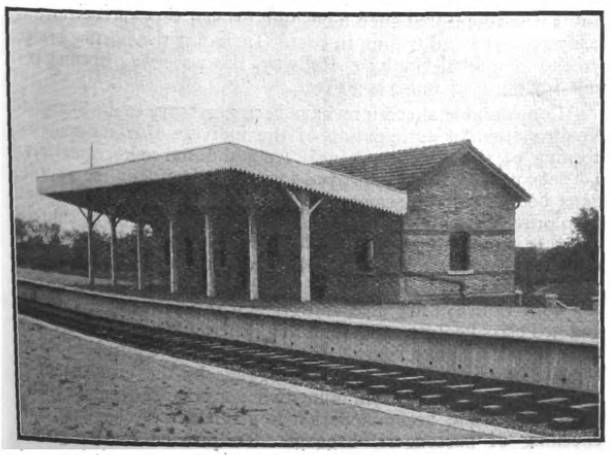
the already long line of wharves and docks on the Huangpu considerably extended. With these in direct railway communication with one of the most productive regions in China, the export trade which she needs should be built up in the most expeditious and economical manner. This Junction line forms an important link in what may be termed the Great Eastern Trunk Line of China. A glance at the map will show continuous communication from Mudken southwards to Hangchow with the exception of the Yangtze crossing at Nanking and is typical of the steady development that is taking place in this great country. Within the last few years we have been put within 12½ days of the great centres of Europe; China is no longer isolated, and it is good that we should be reminded from time to time of these things, so that we may live up to them and adjust our lives, thoughts and habits of business to meet the constant changes brought about by progress and development.

"This Junction line also affords an excellent example of the benefits of co-operation. By hearty co-operation and harmonious working between the two railways under the wise direction of Mr. Chung, mutual advantages have already been obtained, these will be still further expanded and secured by the closer working that will now be possible. It is generally understood that owing to lack of confidence in each other, co-operation in the true sense of the word is not practised between Chinese merchants, yet they hold well together in matters of politics affecting commerce, whilst their individual integrity in business matters is unquestioned. Co-operation is just as essential in business as in national affairs, and with the spirit of development now abroad it may be possible to secure that hearty co-operation which is essential to national and commercial life. This is to be sincerely hoped, as it is the soundest basis upon which to build that peace and prosperity which we all hope to see assured, not only in China, but throughout the world. To sum up, gentlemen, look ahead and co-operate."

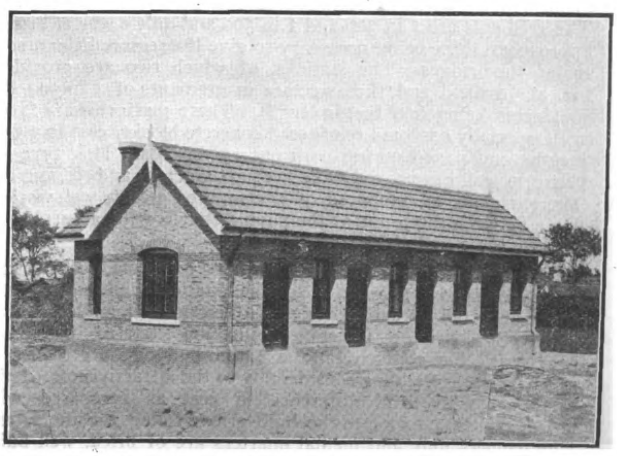
The following technical notes on the Junction Line were supplied the FAR EASTERN REVIEW by the courtesy of the Engineer-in Chief:

This line links up the Shanghai-Nanking Railway with the Shanghai-Hangchow-Ningpo Railway and is 10¼ miles in length from Shanghai North on the former line to Loonghwa Junction on the latter, and is a most important link in what might be termed the Eastern Trunk Line of China. It branches off from the Shanghai-Nanking Railway main line about two miles from Shanghai North Station, crosses Woodlands Creek near Ferry Road, the Soochow Creek near St. John's University and Jessfield Park, Fa Creek, Siccawei Creek and Loongwha Creek, these five creeks necessitating major and minor bridges, the remaining creeks being culverted.

Major bridges span the Soochow and Siccawei Creeks, the spans being 145 feet and 65 feet respectively, and minor bridges span the remaining three, the spans being respectively 40 feet, 20 feet, and 30 feet for Woodlands, Fa Hwa and Loonghwa Creeks. All bridge abutments are built for double line, but steelwork for single line only has been provided. In all cases except the Fa Hwa creek bridge, the centre girders are designed for one other girder to be attached to form eventually a bridge to carry two lines of railway.



SICCAWEI STATION



STATION STAFF QUARTERS AT LOONGHWA JUNCTION

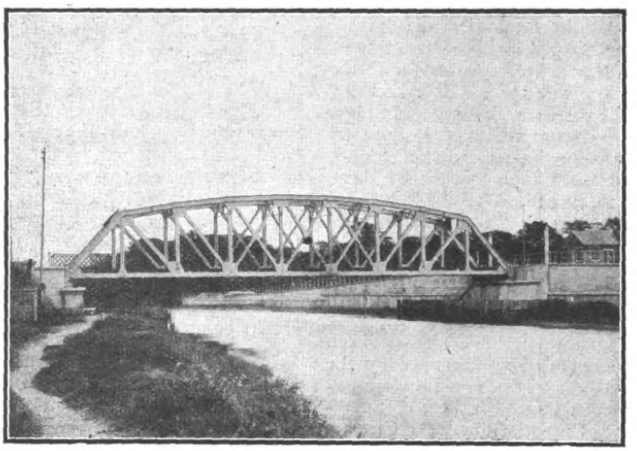
The Soochow Creek bridge abutments are of reinforced concrete carried on pile foundations, and the abutments of the remaining bridges are of massed concrete also on pile foundations. In all foundations Oregon pine piles 12″ square were used except in the case of the Fa Hwa Creek bridge where an 8″ square section was sufficient. Substantial coffer-damming was necessary in all cases except at Fa Hwa Creek which was simply dammed with earth dams. The nature of the subsoil was in all cases the same—silt, in some of the foundations softer and more treacherous than in others. In the case of the Soochow Creek bridge, the treacherous nature of the soil necessitated special precautions in the design whereby stability was ensured by spreading the weight. The ballast used in the concrete for all the bridges came from Soochow and the quarries near Sung Kiang, ¾ inch and 1″ gauges being mixed together. The composition of the concrete is:—1 cement, 3 Ningpo sand, and 6 ballast.

In regard to the bridge steel-work, tenders were invited in the usual manner. British manufacturers were unable to quote as official war restrictions prevented them from guaranteeing either manufacture or delivery in a limited time. The only tenderers were the Hang Yeh Ping Ironworks and the United States Steel Products Co. The tender of the former was higher than that of the latter, and consequently the United States Steel Products Co. was awarded the contract. With the exception of the Soochow Creek bridge all the others are plate girders. No difficulty was experienced in erection, all parts fitting well together in every instance. The bridge work generally is all of a substantial character carried out in first class style in a most economical manner.

Culverts. The culverts are 26 in number of reinforced concrete tubes 3 feet internal diameter cast in 2 feet lengths. No bearing piles were used in the foundations, only sheet piling around the 12 inch thick concrete slab on which the tube is set. The composition of the concrete in the tubes is 1, 2, 4 and in the remainder 1, 3, 6. The wing walls are built of dry rubble neatly hand-packed.

Earthwork. The bank is 18 feet wide at Formation level and 26 feet in the cuttings of which there are only two, both under 3′-6″ in depth. Sufficient land width to enable the track to be doubled at some future date has been left all through. The gradients are 1 in 300 and 1 in 500 and only occur at bridge approaches, these being necessary to give the required clearances under the bridges. The stations, of which two are provided, viz. at Jessfield and Siccawei, are in gradients of 1 in 500, the platforms being 600 feet in length. These platforms are faced with specially designed reinforced concrete blocks, cast in 3 feet lengths and paved on top with quarry spawls. This type of platform wall has proved to be very satisfactory and economical. The surfacing is composed of decomposed granite well worked down between the joints of the paving spawls with a surplus of sand on top 1 inch thick.

In anticipation of the neighbourhood of Jessfield developing as a residential quarter a suitable station building of neat appearance and attractive design with more accommodation than either Siccawei or Loonghwa Junction stations has been provided. The roofs of all the station buildings are tiled with red French tiles, adding considerably to the attractiveness of the buildings with little difference in cost as compared with corrugated iron, owing to the high prices ruling for the latter. The gangers huts and menial quarters are of brick, well built, airy and neat in design. All the buildings, whether for public use or staff purposes, have been most carefully and conveniently planned and designed, and are well built throughout. Well-laid out station approach roads are at Jessfield, Siccawei and Loonghwa Junction.



Soochow Creek Bridge at Jessfield—145 foot span

Permanent way. The rails are 85 lbs. per yard British Standard Section obtained from the Hang Yeh Ping Ironworks, as were also the fastenings. The sleepers are of three kinds, creosoted Douglas Fir, Selected Japanese Oak, and a small quantity of Jarrah sleepers, the reason for adopting these different varieties being to obtain reliable data for future use by careful observations and record as to cost, wear, etc. Soochow Granite and Sunkiang Stone have been used for track ballast, bottom ballast being from 3″ to 5″ gauge and top ballast 1½″ gauge. That portion of the line already ballasted in this manner gives very smooth running. The curvature is very easy, the sharpest curve being 3 degrees and the flattest 1 degree.

Apart from the ordinary native pathway level crossings, there are four public road level crossings on the line, viz:—at Jessfield, Brenan, Hunjao and Tsao Chi Roads. The approach gradient in all cases is 1 in 30 easing off at the ends to 1 in 60, thus forming a very easy slope for all vehicular traffic. The Jessfield Road level crossing necessitated very considerable bunding, as this road runs parallel to and close alongside the Soochow Creek at the southern end of the Soochow Creek bridge. This bunding is built up of reinforced concrete interlocking piles driven down to within 8′-0″ of water level. On the top of these a reinforced concrete wall with a gradient of 1 in 30 is built to correspond with the grading of the road crossing. All these reinforced concrete piles were cast in the Railway yard close to the site, and it may be interesting to note that out of 690 piles that were made, there was not a single failure either in casting or driving. The composition of the concrete in these piles is:—1 cement, 2 Ningpo sand, 4 Soochow granite-chips ½ in. gauge and under.

Particular care was exercised in washing the ballast and sand to ensure freedom from dirt. The ingredients were carefully gauged and the concrete well mixed and rammed close around and among the reinforcing bars. All reinforced concrete was done under expert supervision. In driving the piles, caps made of layers of Chinese coarse straw-paper were used to prevent chipping at the heads from the impact of the monkey in falling, and it was found that such a cushion proved very successful, was easily renewed and trifling in cost. Including the existing bridge on the Shanghai-Nanking Railway, the waterway opening per mile for the 10¼ miles is 39 feet.

Considerable alterations have been necessary to the Shanghai North station in anticipation of the increase of traffic upon the opening of the Junction Line. An additional covered platform has been provided and improved facilities given for the expeditious booking of passengers. The Woosung Branch Line has been provided with a station building and booking office entirely separate from the Main Line building to relieve the congestion which at present exists, and which will be accentuated by the opening of the Junction Line. The coolie class booking offices for both railways are also entirely separated from the 1st, 2nd and 3rd class booking offices, adding generally to the comfort and convenience of passengers. Improvements have also been made for the handling of passengers' baggage by the provision of a commodious baggage room immediately accessible from the road, in which ample accommodation is given for the booking and checking of passengers' baggage. To provide for the goods traffic from the Shanghai-Hangchow-Ningpo Railway, a new dock 1,000 feet long by 200′-0″ wide with ample depth of water

at lowest tide to take the heaviest cargo lighters, has been built at Markham Road. Godowns have been erected upon either side and every facility given for the the rapid handling of cargo. The whole of the yard and godowns are electrically lighted, and efficient fire protection has been given throughout. The Shanghai-Nanking Railway has trained fire brigades both at the Shanghai North station and at the Markham Road Goods Depot. Emergency calls are given from time to time to test the efficiency of the brigades.

Security to the Traffic is secured by the electrical staff working which is now being installed on the Junction Line. The Shanghai-Nanking Railway has already adopted a system of electrical train staff working as far as Soochow and is now making arrangements to extend this to Nanking. It is eventually proposed to adopt a similar system on the Shanghai-Hangchow-Ningpo Railway. In addition to this a simple and effective system of signals has been erected at every station and Junction to ensure further safety in train working. All signal posts are of reinforced concrete and the lamps of Shanghai North and Markham Road Junction are electrically lighted.

The Managing Director on behalf of the Chinese Government is Mr. M. Y. Chung. Mr. A. C. Clear, M. Inst. C. E., is the Engineer-in-Chief for the whole of the work, whilst Mr. D. P. Griffith, M. A., M. Inst. C. E. Ire., carried out the executive duties of the Junction Line construction as District Engineer, assisted by the following Chinese Engineers and students:— Messrs. J. F. King, C. Y. Hung, Tong Luck, C. P. Fung and S. C. Chen. The intelligence and keen interest in their work displayed by these future engineers of China augurs well for their future success. The building of the Line afforded them a very good opportunity of obtaining knowledge of the most up-to-date methods in reinforced concrete work as well as of first class work generally. Steelwork, reinforcement and general designs were prepared by Mr. E. T. Forestier, A. M. Inst. C. E. Mr. I. Tuxford, Maintenance Engineer S. N. R, supervised construction at Markham Road and Shanghai North with Mr. T. Yang, Senior Assistant Engineer-in-charge. Telephone and Telegraph Work was carried out under the supervision of Mr. W. J. Grey, A. M., Inst. E. E., Electrical Engr. S. N. R.

AMERICAN ASIATIC ASSOCIATION

At the annual meeting of the American Asiatic Association, held at the rooms of the Chamber of Commerce of the state of New York on October 20, Lloyd C. Griscom, formerly Minister to Japan, was elected president, succeeding Willard Straight. The list of officers follows:

President, Lloyd C. Griscom.

Vice-Presidents, Eugene P. Thomas, New York; Theodore B. Wilcox, New York; Alba B. Johnson, Philadelphia, Pa.; John B. Cleveland, Spartanburg, S. C.; Charles M. Schwab, New York; Ellison A. Smyth, Pelzer, S. C.

Treasurer, Joseph R. Patterson, New York.

Secretary, John Foord, New York.

Executive committee, class of 1919, George C. Allen, New York; H. E. Cole, New York; Willard Straight, New York.

Mr. Straight, the retiring president, reviewed general conditions in the Far East, saying in part:

Although during the past year there have been a number of important developments in the Far East, the fundamental situation has remained substantially unchanged. The death and consequent elimination of Yuan Shih-kai, and the conclusion of the agreement between Russia and Japan with regard to their respective interests in Manchuria and Mongolia, were merely the logical results of the trend of events which for some time had been manifest.

Considerable concern has been expressed in this country lest the open door for American trade in China would be closed, and efforts have been made by some to stir up ill feeling and apprehension on the part of the public with a view to creating difficulties between the United States and Japan. With these efforts your executives have not been in sympathy.

We have felt it to be the part of wisdom to watch developments rather than to attempt to express from time to time our views as to a situation which was constantly changing.

Despite political perplexities in the Far East, American trade, both with China and Japan, has increased considerably. New firms have been organized and old firms have been strengthened, and there seems to be an increasing interest in the possibilities of Far Eastern trade, both among those who wish to export to Eastern Asia and those who are commencing to import Asiatic products.

Our trade with the Philippines has also increased, and despite political uncertainties there seems a growing readiness on the part of American investors to place money in Philippine developments.

During the past year also, the ownership of the Pacific Mail Steamship Company has passed to the American International Corporation and W. R. Grace & Co., and the transpacific service, which had been discontinued by the previous management, has now been resumed. American banking interests, which for the past few years have evidenced little activity in China, have recently concluded contracts which should materially benefit American trade.

After a number of years of agitation Congress has finally appropriated a sum sufficient to purchase adequate accommodations for the American Consulate General, the Consulate Court and Post Office in Shanghai. The work of Thomas Sammons in this connection should be highly commended, and I believe the association is to be complimented on the part which it played in bringing about this happy result.

During the year just past Julean Arnold, Commercial Attache at Peking, has shown a commendable interest in introducing American goods in China. Mr. Arnold is now in this country traveling from point to point, and has been successful in organizing a number of China-American trade clubs.

In order to meet what is apparently a growing interest throughout the country in Far Eastern matters it has now been determined to enlarge the "Journal of the American Asiatic Association" and make it more popular in character with a view to increasing its circulation, at the same time enlarging the scope of the activities as well as the membership of this association.

In conclusion I desire to express my appreciation of the honor which you have in the past done me in conferring upon me the presidency of this association. I believe the association is to be congratulated in the election of Lloyd Griscom for the ensuing year. The fact that Mr. Griscom served as Minister to Japan, his long experience in the diplomatic service, as well as his intimate knowledge of Far Eastern problems, make him particularly fitted to direct the activities of this association.

KOWLOON-CANTON RAILWAY (BRITISH SECTION)

[ANNUAL REPORT FOR 1915]

The building of the new Terminal Station at Kowloon has made satisfactory progress during the year, the Building itself being practically finished; though owing to the war unforeseen delays in the arrival from England of fittings and fixtures have held up the completion of the interior, it is yet hoped that it may be possible to open the Building for the Public early in the coming year.

A thoroughly up-to-date mechanical interlocking signal system has been installed at the Kowloon Terminus by the Railway Signal Company, Limited, all signals and points within station limits being now operated from a cabin situated at a point overlooking the yard and approaches. The cabin contains 80 levers, 18 of which control 27 points, and 55 are for working 53 fixed signals, ground discs and the gates at Holt's Wharf level crossing, the remaining 7 levers being spare. The new installation was brought into use on November 25th without any interference with traffic. In view of the large number of pedestrians using the above mentioned crossing, it was found necessary to provide an overhead way, and a steel footbridge, originally ordered for a wayside station but afterwards not required, has since been erected here and opened for use of the Public.

Before the Station as a whole can be considered complete, the platforms require to be partly roofed over and the circulating area in front of the west face surfaced, curbed and and metalled. Designs were prepared during the year for the platform roofing and a contract entered into by the Crown Agents for the supply of the necessary materials. In March an order was placed through the Crown Agents for one Avery duplex printing and weighing machine and in July for a Pooley weighbridge.

The repairs to the embankment pitching on the coast line between miles 7½ and 14 mentioned in the last Report have now been completed in a substantial manner and no more trouble may be expected at these points from storms or typhoons.

Quarters for the European staff were commenced in March, one row of three two-storied houses facing south, and one row of five facing east. The former were occupied in September, and the latter in October. The permanent way materials required for the extension to the locomotive yard not arriving till late in the year, very little work could be done on this project. The conversion of the paint shop into a locomotive shed was however commenced and brickwork carried up to roof level in readiness for the steelwork ordered from home, but as this did not arrive a temporary palm leaf roof was erected to enable the building to be used. The erection of the new running shed has been delayed as difficulties were experienced on account of the war in obtaining satisfactory tenders for the steelwork, and further, because possession of the necessary land could not be obtained until recently. New designs for this shed are in course of preparation and probably timber roof trusses on reinforced concrete columns will be adopted. The platform at Sheung Shui station was increased by a width of fifteen feet and the station accommodation doubled. Very extensive repairs were also carried out to the manager's house which has now been put in a state of thorough repair, the cost of the above being charged to working expenses.

The three new Main Line locomotives ordered from England in 1914 arrived in the Colony in May and were erected and have rendered satisfactory service. These engines are fitted with Wakefield's mechanical lubricators to the valves and cylinders and also with tail end rods to the pistons, which is an improvement on those previously purchased. Locomotives Nos. 1, 2, 3 and 4 have all been thoroughly overhauled during the year but no painting could be carried out as the paint shop had to be used as a running shed; this however will be done as soon as the paint shop is completed. During March eight new coaches were completed and put into service, and underframes for four additional coaches were received from home on which two third class coaches have been erected; the remaining two, a first and second class composite and a restaurant car, are well in hand.

On August 7th and 8th an aviation meeting took place at Lok Lo Ha by a Chinese aviator. A most efficient service of special trains was instituted but unfortunately the meeting did not attract the Chinese public to the extent anticipated, largely due to the rather high charge for admission made by the aviator to third class passengers. In August a live fish traffic commenced between Shek Lung and Canton, and in order to deal with this two 30-ton wagons were fitted with special tanks.

All tracks have been maintained to a good standard though in a few places the sleepers are still being attacked by white ants despite constant attention. The Expenditure chargeable to Construction Account to December 31st, 1914, was $14,095,660.69, and during the year further expenditure was incurred on works detailed in this report amounting to $638,995.11, which after deducting a sum of $22,829.97, being receipts on account of sales of plant, etc., leaves a total of $616,165.14 for the year.

The Revenue Statements of Earnings and Expenditure take the usual form. The receipts on account of local coaching traffic amounted to $114,360.34, an increase of $5,961.76 as compared with 1914, while the local goods and sundry traffic show decreases of $2,069.67 and $6,178.67 respectively. The Revenue from through and joint sectional coaching traffic was $21,304.16 less than the previous year mainly due to a fall in the number of through and joint sectional passengers carried as compared with 1914, which was an abnormal year owing to the depreciated Chinese Government notes being for some time accepted at face value by the Railway (Chinese Section). The Working Expenses amount to $297,265.97 or $22,899.58 more than the previous year. The excess is due to the inclusion of expenditure incurred in repairs to manager's house, improvements at Sheung Shui station, and to a payment of rent to the Chinese Section, amounting to $10,478.81, for the station accommodation at Shum Chun from October, 1911 to June 30th, 1915. The Gross Earnings for the year were $343,769.08 as against $364,608.32 for 1914. The balance after paying working expenses stands at $46,503.11.

During my absence on short leave from August 28th to 7th October, 1915, Mr. Robert Baker (Engineer of Way and Works) acted as Manager. The repairs to embankments and erection of the various new buildings necessitated additional engineering staff and in November, 1914, the services of Mr. A. S. MacKichan were obtained. Mr. W. G. Clark, Traffic Assistant, was granted 8 months leave and returned to duty on December 22nd. Mr. W. S. Cuff, Guard, left with the Hongkong Police Contingent on 19th November to join His Majesty's Forces.

H. P. WINSLOW,
Manager.

Revenue Account for the Year ending 31st December, 1915

1914	Per cent. on Gross Receipts	Expenditure	Amount 1915	Per cent. on Gross Receipts
$ c.	%	*Main Line*	$ c.	%
42,857.71	11.75	To Maintenance of Way and Works	53,665.32	15.61
129,861.27	35.61	„ Loco. Carriage & Wagon Expenses	130,184.01	37.87
46,234.00	12.68	„ Traffic Expenses	47,840.08	16.82
40,422.17	11.09	„ General Charges	45,000.00	13.09
...	...	„ Special & Miscellaneous Expenditure	52.00	.02
		Branch Line		
6,369.43	1.75	To Maintenance of Way and Works	2,828.42	.82
7,394.28	2.03	„ Loco, Carriage & Wagon Expenses	6,380.14	1.86
1,227.53	.34	„ Traffic Expenses	1,310.00	.38
...	...	„ General Charges	...	...
...	...	„ Special & Miscellaneous Expenditure	...	...
274,366.39	75.25		297,265.97	86.47
90,241.93	24.75	„ Balance (Net Earnings)	46,503.11	13.53
364,608.32	100.00		$343,769.08	100.00

1914	Earnings	Amount 1915	Total
$ c.	*Local*	$ c.	$ c.
108,398.58	By Coaching Traffic	114,360.34	
10,121.25	„ Goods Traffic	8,051.57	
12,861.59	„ Sundry Traffic	6,682.92	
131,381.42			129,094.83
	Foreign		
215,045.63	By Coaching Traffic	193,741.47	
10,690.98	„ Goods Traffic	13,665.73	
...	„ Sundry Traffic	215.00	
225,736.61			207,622.20
	Branch Line		
7,018.14	By Coaching Traffic	6,593.09	
472.15	„ Goods Traffic	458.96	
...	„ Sundry Traffic	...	
7,490.29			7,052.05
$364,608.32			$343,769.08

J. MORRIS,
Chief Accountant.

Kowloon, April 14th, 1916.

H. P. WINSLOW,
Manager.

RECENT BALDWIN LOCOMOTIVES FOR EXPORT

Among the locomotives recently built for export by the Baldwin Locomotive Works, are 10 for the Canton-Hankow Railway of China (Hupei-Hunan Section), which are of more than ordinary interest because of the conditions under which they will operate and the details of their construction.

The Chinese locomotives are divided into three classes. Four of the engines are of the Ten-wheel type for passenger service, four are of the Consolidation type for heavy freight service, and the remaining two are tank engines of the 0-6-0 type, for switching service. These are all standard gage locomotives, built with interchangeable details where practicable. The materials conform to specification issued by the American Society for Testing Materials. The drawings were prepared by the builders, but the designs are strongly suggestive of foreign practice.

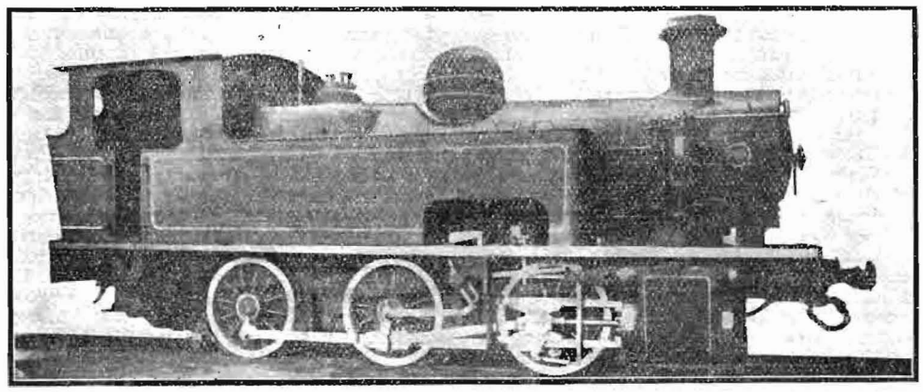
The passenger locomotives exert a tractive effort of 23,600 lb., based on a mean effective pressure equal to 85 per cent of the boiler pressure. The boiler is of the Belpaire type, with a steel firebox, rocking grate and Schmidt superheater. The frames consist of steel plates, 1¼ in. thick. Each frame is made in one piece, and a substantial system of cross bracing is applied to insure lateral stiffness. This bracing includes a long steel plate, placed in a horizontal position between the first and second pairs of driving wheels. The driving springs are underhung, those of the second and third pairs of driving wheels being connected by equalizing beams. The engine truck has a swing bolster and plate frames. The truck springs are not equalized, as the frames are suspended directly from them.

The cylinders are cast separately from the saddle. Piston valves 11 in. in diameter control the steam distribution, and the valve gear is of the Walschaert type with screw reverse mechanism. The equipment includes Westinghouse air brakes, one Weir's feed-water pump and heater, and one Metcalf's vertical restarting hot water injector. The driving journals and cylinders are lubricated by mechanical oil pumps. The design is so arranged that the Lockyer balanced throttle valve, manufactured in Great Britain, can be installed. However, as these throttles could not be secured in time, Baldwin throttles were temporarily fitted and Lockyer valves will be installed subsequent to the arrival of the engines in China.

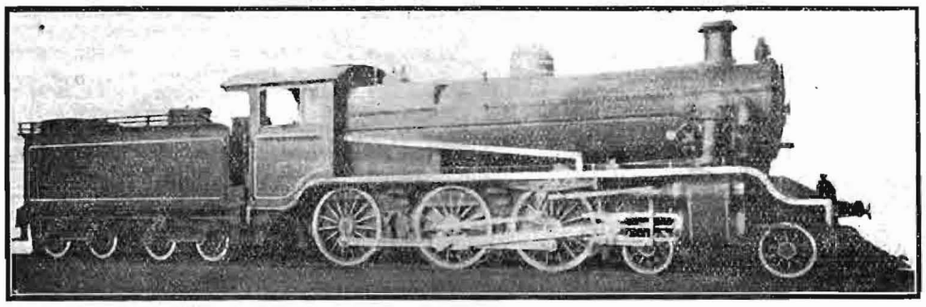
In general construction and equipment the Consolidation engines are similar to the Ten-wheelers. In order to obtain sufficient grate area, the firebox in the Consolidation type is placed above the rear pair of drivers, while in the Ten-wheel type it is between the frames. The Consolidations exert a tractive effort of 33,500 lb.

The switchers exert a tractive effort of 19,600 lb. The water supply is carried in side tanks, and the fuel in a coal box placed back of the cab. In general construction, these locomotives are similar to the road engines.

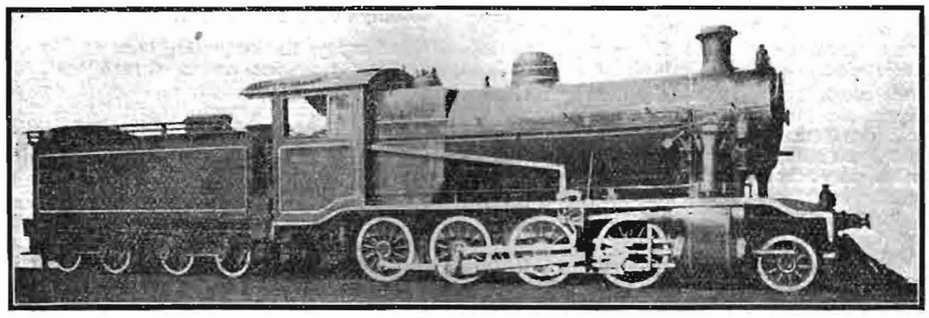
The leading dimensions of the locomotives for the Canton-Hankow Railway are given in the following tables:



SIX-WHEEL TANK ENGINE FOR SWITCHING SERVICE, CANTON-HANKOW RAILWAY



TEN-WHEEL LOCOMOTIVE FOR THE CANTON-HANKOW RAILWAY



CANTON-HANKOW RAILWAY CONSOLIDATION TYPE LOCOMOTIVE

General Data

	2-8-0	4-6-0	0-6-0
Type	2-8-0	4-6-0	0-6-0
Gage	4 ft. 8½ in.	4 ft. 8½ in.	4 ft. 8½ in.
Service	Freight	Passenger	Switch
Fuel	Bit. coal	Bit. coal	Bit. coal
Tractive effort	33,500 lb.	23,700 lb.	19,600 lb.
Weight in working order	159,600 lb.	159,700 lb.	100,500 lb.
Weight on drivers	143,400 lb.	113,900 lb.	100,500 lb.
Weight on leading truck	16,200 lb.	45,800 lb.	.....
Weight of engine and tender in working order	261,000 lb.	261,000 lb.	.....
Wheel base, driving	16 ft.	14 ft. 9 in.	12 ft.
Wheel base, total engine	24 ft. 3 in.	28 ft.	12 ft.
Wheel base, engine and tender	52 ft. 4¼ in.	55 ft. 7¼ in.	12 ft.
Cylinder			
Kind	Simple	Simple	Simple
Diameter and stroke	22 in. by 26 in.	21 in. by 26 in.	17 in. by 24 in
Valves			
Kind	Piston	Piston	Piston
Diameter	11 in.	11 in.	8 in.
Wheels			
Driving, diameter over tires	51 in.	66 in.	48 in.
Boiler			
Style	Belpaire	Belpaire	Belpaire
Working pressure	160 lb.	160 lb.	160 lb.
Tubes, number and outside diameter	161—2 in.	137—2 in.	182—2 in.
Flues, number and outside diameter	24—5⅜ in.	22—5⅜ in.	.....
Tubes and flues, length	14 ft. 4 in.	15 ft. 7½ in.	10 ft. 6 in.
Heating surface, tubes and flues, sq. ft.	1,682	1,596	993
Heating surface, firebox, sq. ft.	157	185	103
Heating surface, total, sq. ft.	1,836	1,781	1,096
Superheater heating surface, sq. ft.	420	404	.....
Grate area, sq. ft.	39.7	31.8	19.5

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

The Wuchang-Changsha Railway.—Construction work on the Wuchang-Changsha section of the Hankow-Canton railway, has been seriously interfered with by the financial stringency caused by the war, and by the great difficulties experienced in the purchase of necessary material. Track has been laid for eighty miles from Wuchang, and an additional thirty miles have been ballasted and are ready for the rails. Gangs are working on 25 miles of permanent way northward from Changsha and another 25 miles is being built northward from Yochow. Work has been obstructed throughout owing to transportation difficulties, costs in connexion with which constitute the largest item of expenditure, all rivers being useless for navigation except at high water.

Necessary buildings in connexion with the railway have not been built owing to shortage of finance, and supplies of materials which should have come to hand eighteen months ago are just being delivered, while some foreign contracts have had to be cancelled. Owing to the war prices have increased one hundred per cent., estimates having, of course, been based upon pre-war conditions.

Efforts are being made to have the line in operation between Wuchang and Changsha by April of next year, but the railway officials will be pleased if they can link up by June, seeing how great are the unlooked for delays. What these are is indicated by an incident which occurred in connexion with a shipment of locomotives. The steamer carrying them arrived at Wuchang without adequate means for discharging them and after considerable delay was compelled to return to Shanghai and there transfer them to another vessel. In his report for the September quarters of this year the British Consul-General at Changsha further illustrated some of the trials and tribulations attending the work. He stated:

But for an unfortunate occurrence to one of the well-curbs of the Liu Yang River bridge, the Changsha section of the line would be open, for a distance of twenty-six miles, to construction trains. The previous district engineer, Mr. Boothby, had no compressed-air plant, and had to work with pumps and dynamite for sinking the wells. The explosive provided was nitrogelatine, the exact power of which was not accurately known to the engineers, who were accustomed to ordinary dynamite. Owing to alternating strata of hardish clay and loose sand, the well has had to be sunk some 65-ft. below the river bed.

An air plant was at last available. Mr. Medlock, the present engineer, brought it to Changsha and installed it on this well, thereby accelerating the work considerably. Unfortunately, within one day of reaching hard bottom, the air pressure cracked the cemented sides of the well, which had been weakened by the use of explosives. The work can now only be completed by divers, involving a delay of about one month.

Meanwhile steel bridge materials are arriving, and twelve miles of rails have also arrived from Hanyang in steel lighters drawing 5-ft. to unload which only four days were allowed, after which demurrage at the rate of Tls. 250 a day per lighter was to be paid. The watermark at Changsha was, at the time, somewhere between three and four feet above Customs zero. Somehow or other the lighters were able to be towed to the mouth of the Sin-ho creek, and by strenuous work the rails were landed ashore in small junks within the time allowed. The shipping arrangements, in this ease, were made by the Hanyang Steel Works Authorities, who supply the rails. This is an instance of the difficulties the British engineers have to contend against, at a time when funds are low and materials hard to obtain.

Nevertheless it is expected that the line will be opened right through from Wuchang to Changsha in April or May next year. The prospects of the railway are good. In the single case of the Pinghsiang Colliery, it will most probably have the carriage of 2,000 tons of coke a day from the very first and possibly more.

Proposed Extension of Kiukiang-Nanchang Ry.—According to a report by Mr. W. Russell Brown, H. B. M's Consul, the shareholders of the Kiukiang-Nanchang Railway are anxious to secure the extension of the line from Nanchang to Kan Hsien (late Kanchow) in Southern Kiangsi in the hope that the outlet so given to the rich products of that region may bring increased traffic to the railway and so aid the restoration of its financial position. A suggestion was recently brought forward by the Assistant Director to the effect that a loan of $25,000,000 should be raised from American financiers and, after repayment of the outstanding Japanese and Chinese loans used for the extension to Kanchow.

The following table shows the amount of cargo brought into Kiukiang by the Nanchang-Kiukiang Railway during the nine months ended September 30th, 1916:—

January to March.

Description.	*Classifier.*	*1915.*	*1916.*
Tea, seed	Piculs		15.59
Tea, black	,,		400.87
Tea, leaf	,,		62.26
Tea, dust	,,		2.41
Tea, stalk	,,		124.18
Timber, planks	Fang		910.
Wood, poles, large	Pieces		138.
Wood, poles, medium	,,		190.
Wood, poles, small.	,,		195.
Wood, poles, miscellaneous	,,		117.

April to June.

Bamboo	Pieces	1,066	1,816.
Tea, black	Piculs	2,072.92	10,008.32
Tea, leaf	,,	7,543.08	9,564.23
Tea, dust	,,	121.39	1.21
Tea, stalk	,,	17.85	109.58
Timber, planks	Fang	1,109.	1,067.
Wood, poles, large	Pieces		167.
Wood, poles, medium	,,	630.	69.
Wood, poles, miscellaneous	,,	226.	51.

July to September

Description.	*Classifier.*	*1915.*	*1916.*
Tea, black	Piculs	2,742	1,831
Tea, leaf	,,	7,276	6,615
Tea, dust	,,	69	3,552
Tea, stalk	,,	461	221
Timber, planks	Fang	1,130	965
Junk borne June quarter 1916, Tea, black	Piculs		105,447.33
Junk borne June quarter, 1916. Tea, leaf	Piculs		12,415.18
Junk borne, Sept. quarter, Tea, black	Piculs		11,121
Junk borne Sept. quarter, Tea, leaf	Piculs		11,310

An examination of the above table of rail-borne cargo shows that no inconsiderable part of the trade of the port—approximately 9 per cent of the junk-borne total in the June quarter—in spite of the heavy handicaps of bad management and railway maintenance, taxes levied on all provincial goods travelling by rail. Under efficient management this is merely a matter of time, the volume of rail-borne cargo is certain to increase and the line is likely eventually to carry the bulk of cargo arriving in Kiukiang for export. This must result in a movement of shipping away from the British Concession across the creek to the west in order to be nearer to the railway. This will mean that the business centre of the port will pass from the Concession to the railway river front, and steamers that have facilities to load cargo in the vicinity of the railway will enjoy a marked advantage as compared to their competitors in the Concession. In this connection it should be noted that the Japanese firm of Nisshin Kisen Kaisha has already acquired hulk and shore connections opposite the railway terminus. It is, of course, likely that the railway company may in time build a public wharf, but in view of the strong Japanese influence in the railway Japanese steamers would no doubt be shown preference as compared with those of other nations.

The contemplated removal of the Native Customs and possibly the Maritime Customs to a site above the creek in close proximity to the railway will still further tend to take away cargo from steamers berthing at the Concession. The bridging of the creek and the expansion of the railway along the back of the British concession is absolutely necessary in order to prevent the diversion of the business centre of the port from the Concession in the interest of the resident British firms.

Ssupingkai - Chengchiatun - Railway.—Survey on the route for the proposed Ssupingkai-Chengchiatun Railway having been completed, Mr. Wu, the Superintendent of the Railway, is proceeding to Peking to submit the plan and estimate to the Department of Communications. Mr. Wu recently conferred with the South Manchuria Railway Co.'s authorities in Dairen. Since the price of materials has considerably advanced, it is impossible to build the line with the amount of money originally deemed sufficient for the construction. Therefore, the work will be started with a view of making it serve the purpose for the time being, and gradually replace it with more permanent structures. Expenses required in this way, for railway bed and a temporary bridge across the Liao-Ho, etc., will not be more than $4,000,000, but if a steel bridge is to be built, this alone will cost over $1,800,000, and the total cost will exceed $6,000,000.

A portion of the road-bed has been built. Work on the balance of the route will be started next year, as soon as the ground thaws, with the object of completing a temporary line as far as Sankiangkow by December, 1917. This section between Ssupingkai and Sankiangkow will then be opened to traffic. It is expected that the entire line up to Chengchiatun will be ready for service by August, 1918. After the provisional line comes into existence,

the authorities will set to work to reconstruct it into a permanent road a section at a time and the reconstruction probably will end by 1919. But as this depends upon the financial condition of the Company as well as the facility of those who will supply the required materials, more or less delay may ensue.

The Hanyang Steel Works will furnish rails, the first lot having been shipped on November 30. It will be brought to Ssupingkai and onward by Chinese carts, the only conveyance available and to get a sufficient number of them together will be a painstaking task in itself.

For the present no station will be built at the Ssupingkai end, but the installation of the South Manchuria Railway Co. there will be utilized. Rigid economy will be exercised all around, and yet, about $120,000 per mile is expected to be required for the construction, in view of the difficult nature of ground over which the railway is to run. Great difficulties are especially expected in the bridging of the Liao River, where it is said that even at a depth of 150 feet a solid foundation is still lacking.

Work on Canton-Szechwan-Hankow Railway.—According to the *China Advertiser*, translating from Chinese newspapers, the plan of connecting Kwangtung with Szechwan was first mapped out by an American corporation. In view of great national interests involved in the line, however, the late Chang Chih-tang bought back the concession from the corporation with the idea of building it under the auspices of the Government. But strong opposition of the people in the province through which the line was to pass, who wanted it to be constructed as a popular enterprise, prevented the work from being carried out for several years. Later Mr. Sheng Hsuan-hui, thinking it hopeless to see the railway brought into existence if left in the hands of private promoters undertook to have the Canton-Hankow and the Hankow-Szechwan lines nationalized and planned to push the work by obtaining the necessary funds from abroad. But it happened that in Kwangtung and Szechwan shares having been subscribed for, works were about to be started under private management. In consequence, considerable opposition was raised against Sheng's scheme, with the result that the Government had to relinquish the project and commence operations in Hunan and Hupeh, giving permission to Kwangtung and Szechwan to proceed with the work under the supervision of the private companies concerned.

This left the section between Wuchang and Kwangchow on the Canton-Hankow line and the section between Hankow and Kweichow on the Hankow-Szechwan line in the hands of the Government. When the Republic was established the Government appointed Mr. Jeme Tien-yu superintendent of the lines and detailed him to Hankow to carry out the work. The outbreak of the European war, however, soon compelled this able engineer to drop the extension of the line, as the supply of funds was cut off. Thus, the undertaking so far as the work of advancing the railhead is concerned is now almost suspended, but on the section where construction was started gangs of coolies are kept busy. For the present, the Hankow-Szechwan Railway is in the follwing condition. With the exception of the section between Chengtu and Kweichowfu, which is to be built by a private company, the balance of the line belongs to the Government. This Government section is divided into two parts, one between Kweichow and Ichang and Hankow. Each part has its own general office for construction, which is located at Ichang and Hankow respectively. Owing to the very mountainous nature of ground near Ichang, an outlay of a large sum of money was found necessary for construction. But the war having deprived China of the source whence she could obtain her financial supply, work is now abandoned. In the division under the supervision of the Hankow-Ichang General Construction Office, work was going on the 20 li section between Tienmen Hsien and Peishi. Director Jeme however thought it unnecessary to maintain the general office for such a short section and so closed it last year. He is now personally superintending the work. The line between Hankow and Peishi having already been completed Mr. Jeme managed to obtain funds from a foreign bank to push it further westward 37 kilometers beyond Peisbi. A survey was made, and the purchase of land has been started.

On the Canton-Hankow line, practically the whole route is owned by the Government, with the exception of a stretch near Kwangchow and theChangsha-Chuchow section, which are in the hands of a private corporation. The latter is in the possession of Hunan people and in working order. For the Government line, a general office was established at Hankow and work was pushed from Wuchang to Hsuchiapeng, when the outbreak of the European war compelled the authorities to suspend operations. Later, however, arrangements having been made between the railway authorities and a foreign bank, funds were procured to push the railhead to Yochow, but when the extension was undertaken it was found that unless Changsha was reached, the line would not pay. With that end in view, therefore, further negotiations were opened between the Communations Department and the bankers, and money was obtained to carry on construction as far as Changsha for a further distance of 300 li. Rails have already been laid for the section between Wuchang and Puchi Hsien for some 200 li, and railway materials are being carried forward over the line. It is expected that the Wuchang-Yochow section will be opened to traffic by the coming spring.

Karafuto Ry. Expense Curtailed.—The present Japanese ministry has made a cut of 260,000 yen in the building expenses of the Karafuto railway for the next fiscal year, which, according to the original plan made by the Okuma cabinet, was to be 1,230,000 yen. The railway is to run round the island, and 19 miles in Atei Bay line and 38 miles in the western coast line were decided upon for construction during next fiscal year by the Okuma ministry. The present ministry has lessened the next year's portion in the western coast line to 28 miles.

Japan's Railway Revenue.—The revenue of the Imperial Japanese Government Railways from April to November 21 was 41,529,387 yen in passenger fares and 42,647,540 yen in freight charges. Compared with the same period of 1914, there was an increase of 3,676,-134 yen in passenger fares and 8,769,781 yen in freight charges, and against the same period of 1915, an increase of 4,446,136 yen in passenger fares and 8,396,573 yen in freight charges, this year.

Haiphong-Yunnan Railway.—The gross receipts of the Haiphong-Yunnanfu Railway (859 kilometres) for the first eight months of 1916 amounted to $2,028,904 as against $1,781,-962 for the same period in 1915. Although the rainfall this year has, if anything, been less than the average, traffic on the Haiphong-Yunnanfu Railway has been interrupted several times owing to landslides and heavy goods traffic has been stopped for some months. Messrs. Shewan, Tomes and Company have had $60,000 worth of machinery on the line since the beginning of May, which has not yet reached Yunnanfu. The worst break was in the Namti valley, where tunnel No. 20 fell in, fortunately without causing any loss of life; this, in addition to necessitating lengthy and costly repairs, has caused considerable anxiety to the Railway Authorities, as the mountain which this tunnel pierces is constantly moving. It is hoped by the end of October to be able to push goods wagons through this tunnel by hand, but it will probably be some months before it is considered safe for a locomotive to pass.

Shantung Railway.—The estimates for the Shantung Railway for the next fiscal year, now under overhauling at the Japanese War Office, are substantially the same as those for the preceding year with an increase of Y100,000 or thereabouts for construction and current expenses. The aggregate amount is put at Y650,000 in round figures.

On the reorganization of the Shantung Railway staff (Mr. T. Fujita, Director-General), M. S. Sakaguchi (Superintendent of the Mining Department) has been created Director, assuming the place of assistant to Mr. Fujita.

The five departments have been increased to eight with their respective superintendents as under:—

Mr. T. Sayeki, Auditing and Statistical; Mr. S. Kitada, Traffic; Mr. Y. Funata. Locomotive; Mr. K. Nakamura, Construction; Mr. K. Kato, Accounting; Mr. S. Kobayashi, Stores; Dr. Y. Homma, Hygienic; Mr. K. Wada, Workshops. The Auditing and Statistical Department is a new creation; the Transportation Department has been resolved into the Traffic and the Locomotives, and the Accounting Department into the Accounting and the Stores. The Railway staff consists of 29 officials of the *sonin* Rank and 374 of the *hannin* rank.

Russian Railway Bridge at Habarovsk.—The Amur Railway bridge over the Amur at Habarovsk was opened to traffic on November 5/18, the nameday of the Czarowitz, in the presence of Gov.-Gen. Gondatti. The new Bridge was christened after His Imperial Highness. Its construction has taken five years to complete and has cost Roubles 18,000,-000. It is 7593 feet long, one of the longest bridges in the world.

Mengkiang-Linkiang Light Rail Line.—The Mengkiang-Linkiang light rail line, 27 miles in length, the construction of which was undertaken by a group of Chinese gentry, headed by Mr. Wanglinko, has the Sanchiatzu-Wangchiatangtzu section (about 17 miles long) completed. Favourable weather being granted, the whole line may be finished before the end of the year. The light rail line is for the conveyance of timber to be put out from the forest lands in the two Prefectures.

Shanghai Tramways.—The following is the Traffic Return of the Shanghai Tramways for 12 months ended 31st December, 1916, with figures for the corresponding period last year:—

	12 Months ended 31st. December, 1916.	12 Months. ended 31st. December, 1915.
Gross Receipts	$1,537,577.53	$1,348,288.61
Loss by currency depreciation	387,509.61	362,368.77
Effective Receipts	Mex.$1,150,067.92	Mex.$ 985,919.39
Percentage of loss by currency depreciation	26.72	28.58
Car Miles run	3,803,980	3,344,998
Passengers carried	69,089,432	59,749,710

MINES

Tayaokow Coal Mines.—The coal mines at Tayaokow are located at a point about 30 miles north-west of Chinchow, north-east of Hsingcheng and due north of Lienshan Wan. The discovery of the deposit was made ages ago, but aside from its being used for domestic purposes by the local Chinese, the public was hardly aware of the existence of such mines in Western Liao Territory. The fact

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THE FAR EASTERN REVIEW

遠東時報

Engineering
Finance ❋ Commerce

Vol. XIII., No. 8. ❋ SHANGHAI—MANILA ❋ January, 1917.

SUN YAT SEN

EX-PRESIDENT OF THE (PROVISIONAL) REPUBLIC OF CHINA
WHO HAS BEEN AWARDED THE FIRST CLASS ORDER OF MERIT.

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VOL. XIII. SHANGHAI, JANUARY, 1917 No. 8

THE PROJECTED KWANGSI RAILWAY

Physical and General Description of Kwangsi Province

Survey parties are already on the way to look over the country through which the proposed railway through Kwangsi Province is to run. This is an earnest that work will be inaugurated immediately the railway is declared feasible. In order to cover the route quickly and effectively several parties have left to operate in different sections. One party has gone south to make a reconnaissance from Yamchow on the coast to Liuchowfu, on a tributary of the West River; another party will travel up the West river and to Liuchowfu and will make the reconnaissance from there to Kweilin, the capital of the Province. To meet these, two other parties have set out southwards from Hankow. One will take in the country from Chuchow, south-westwards, to Paoking, and another will cover between Paoking and Kweilin.

The following physical and general description of the Province will give an interesting outline of the country which the proposed railway is destined to open up:

Extending from latitude 21° to 26°, and longitude 105° to 112°, the province of Kwangsi comprises, in all, an area of 78,250 sq. miles. From east to west it stretches, at its most, some 400 miles; from north to south its extreme width is some 300. The whole character is mountainous, especially to the north and west; high ranges likewise separate it from Tongking to the south; and from Yunnan to the south-west. But, in a general way, there are few ranges, and merely a succession of individual heights —connected, though with sudden declivities between each.

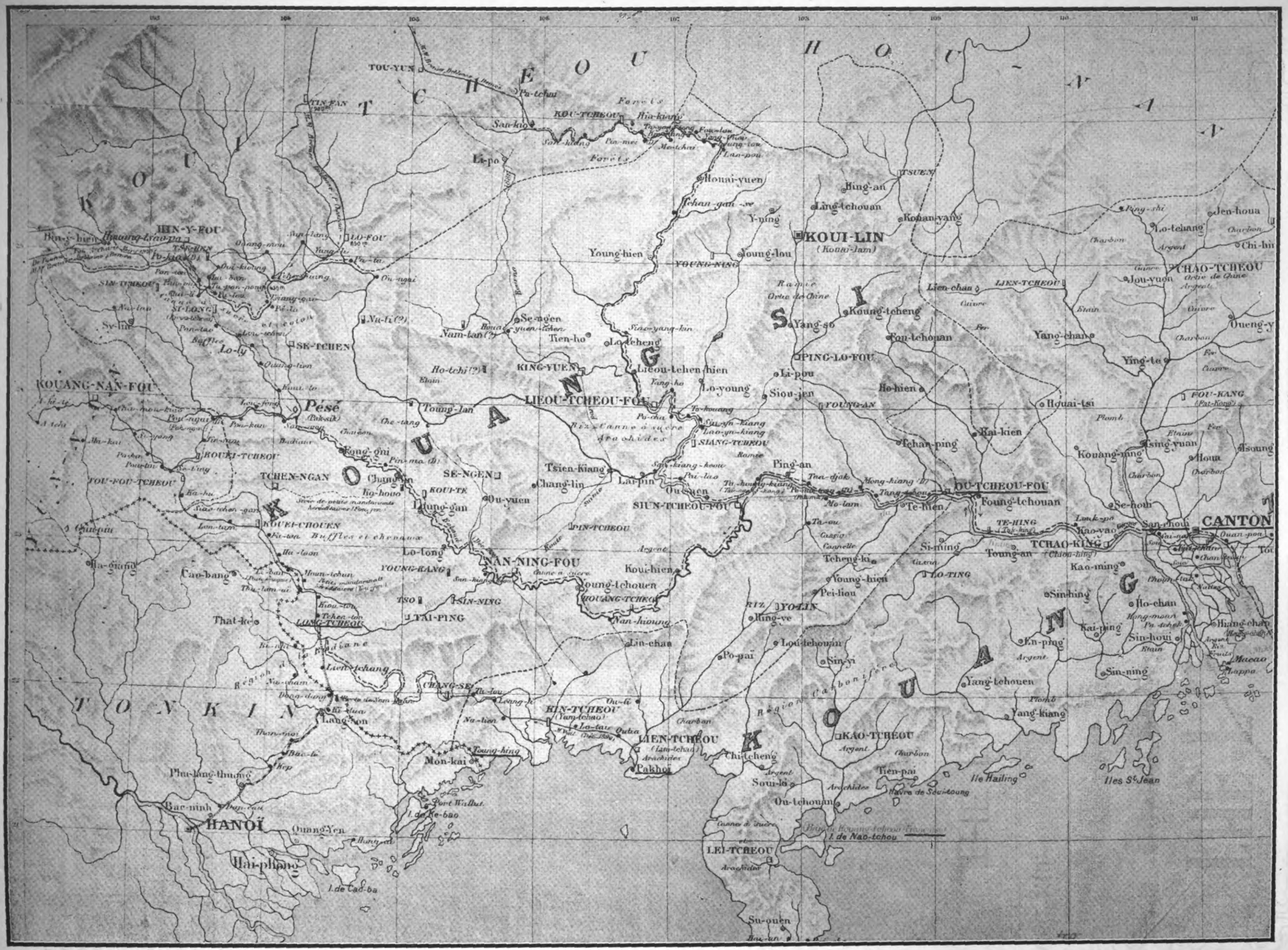
The rivers consist of the trunk river, the West River, and its branches. Of the West River, it is to be observed that it is only known by that name so far as Hsunchowfu, at the junction of the Nanchiang and Peichiang. The former tributary is styled the Yuchiang, with reference to its direction at its junction above Nanning with the Tsochiang similarly so named, and which descends from Lungchow. Upon the Yuchiang lie such towns as Nanning and Kweihsien. The lesser branch of the West River, which passes Nanning and ascends in the Po-se direction, is navigable for large native craft as far as this latter town—some 700 miles from Canton; lesser vessels can reach Pai, 30 miles further; and craft drawing not more than a foot can ascend within the magistracy of Hsilin. Just in the same way as the lesser branch, the greater is navigable for fairly large native craft (say, of 18 tons), so far as Tach'angan, a large centre to the south of Kueiyuan Hsien—sampans can even pass as far as Sanchueh, in Kweichow.

The Cassia River takes its rise within the mountains around Hsinganhsien, and its characteristic is its rapids more especially between Chaop'ing and P'inglo. The Cassia River by means of a canal (navigable only for small craft), is placed in connexion with the Hsinanho, which likewise takes its rise around Hsinganhsien, and, furthermore, is an affluent of the Yangtsze. The Ch'ienchiang joins the West River at T'enghsien, just above this port, and flows in the south-east of this province.

ABORIGINAL WOMEN OF WAN TIEN, KWANGSI

Trade Routes in Kwangsi

An important trade route is that from Pakhoi to Nanhsiang, a mart of consideration 100 miles below Nanning —a way by which passes heavy merchandise for Nanning and North Kwangsi. Another route from Pakhoi is that of a day's journey to Lienchowfu, thence to Chiaochow, Hsiaochiang, Fuwang, and so to Kweihsien, in six days. Again from Lienchow lies a junk route to Wuli, thence by Lingshanhsien to Nanhsiang. Then again lies a way from Pakhoi to Nanning via Yamchow and Hsiaotung, and this route, through mountains, is shorter than that immediately foregoing, and lighter merchandise commonly passes by it. Further, there is a connexion between Yamchow and Pingtang, and by this salt usually passes. From Pingtang merchandise radiates to every quarter, and especially towards the north. Nanning is a natural centre, and via Pinchow, Liuchowfu, and the Yungfuho Kweilin is reached in 12 days. From Nanning, and again via Pinchow, where it divides off, and thence by the Hungshui River and Ch'ingyuan, is a connexion in 15 days or so with Kweichow. By Ch'et'ang, not far from the river just mentioned, and five or six days from Nanning, there is an additional route to Kweichow. Again, there is a connexion between Yamchow, and Kuangnanfu, in Yunnan, via Hsiaotung, the Tsochiang, and the frontier town of Hsiaochenan, in a poverty-stricken area. Yamchow has, moreover, touch with Lungchow in eight or nine days.



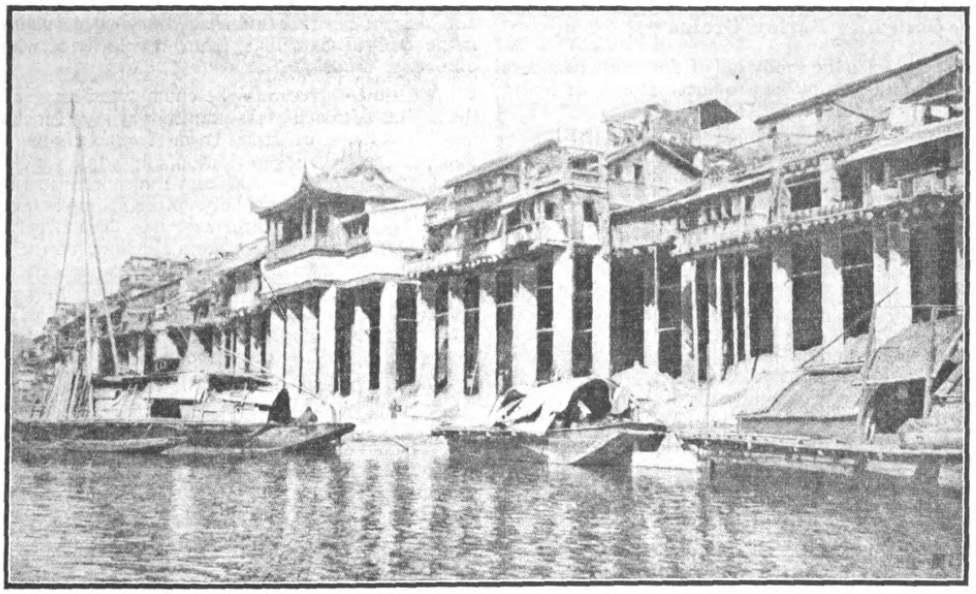
MAP OF KWANGSI PROVINCE PREPARED BY FRENCH MISSIONARIES TO SHOW CHARACTER OF THE COUNTRY, MOUNTAIN CHAINS, PRINCIPAL PRODUCTS AND TRADE ROUTES. THE ROUTES ARE OF INTEREST INDICATING A FEASIBLE ROUTE FOR THE NEW RAILWAY THROUGH KWEILIN (KOUILIN) TO YAMCHOW (KIN TCHEOU)

The temperature shows a great range, frequently falling considerably below freezing-point in the winter, for some weeks, and even occasionally in the south, adjacent to Tongking—while upon the mountains separating Kwangsi from Tongking snow is occasionally to be seen. The population of this province is estimated at 9,000,000, the most populous centres being Kweilin, with an estimated population of 120,000; Wuchowfu, with 70,000; Liuchowfu, with 50,000; and Nanningfu, with 100,000. Besides these chief towns, there are also the not unimportant centres of Yulin, Ch'ingyuan, and Kongkao, the last of which may be styled the "Farmyard of Kwangsi."

The Inhabitants

Among races there are three principal classes, indigenous races, the Cantonese, and the Hakkas. The indigenous races bear different names in varying localities. In the south, especially around Taipingfu and Lungchow, are the T'ujen ("Men of the Soil"); in the north-east these same bear the name of Chuangk'ou, and to the west and north-west they are still otherwise known. The T'ujen race resembles the Annamites, and covers two-thirds of the province. The Cantonese are from Kwangtung. Originating in Tongking, this chain follows its bent to the principal branch of the West River; then, turning in a north-easterly direction, it passes down the stream to Hsunchowfu by the central branch of the main river. That portion of it adjacent to Tongking is known as the "Range of the Hundred Thousand Mountains," by reason of the numerous eminences. According to Captain De Fleurac, the geological formation of the province is parted into two well-defined formations in the vicinity of Nanning—to the west calcareous, and to the east argillaceous.

The minerals chiefly met with are gold, silver, lead, iron, antimony, and coal; and latterly I have heard of platinum. Silver mines have been opened at the following places, among others—T'ip'ingshan, near Kweihsien, and Kueip'inghsien, Hsunchow. Gold is found and worked in two places in this district, namely, Chiuhsingwei and Tungan; it is also known to exist at Ampingssu, and on the borders of this and the neighbouring district of K'aichien, in the Kwangtung province; it is washed on the banks of the Fu River, and at Hop'ing and T'aip'ing, on the banks of the stream which enters the West River at Mengchiang, in the T'enghsien district; it exists in the district of Chaop'ing and in the sub-department of Enyang.



PINGLO ON THE CASSIA RIVER, KWANGSI

chiefly to the south and south-east; and the Hakkas, who originally inhabited the eastern portion of Kwangtung, are to be found everywhere. There are, further, two other races of whom scanty remnants remain—the Miaotzu and the Yaojen. The Miao are divided into tribes according to the colour of their dress—the Black, White, Blue, Red, the Flowery, those of the colour of the pie, and the Lung Miao. The Black Miao cover the tract to the north and north-west of Kwangsi adjacent to the Kweichow frontier. It is they who exploit the enormous pine forests which cover the mountains in this quarter, and their chief concern is with agriculture.

Mineral Wealth

The geological formation around Wuchow, to a layman, appears to be of red sandstone and limestone, ferruginous conglomerate, a formation commonly occurring throughout the province. An expert has said that the surface consists of decomposed marl and granite, and that underneath is chiefly rock of limestone formation. Limestone formation certainly starts half-way up the Cassia River, and a feature of the upper reaches of this stream consists of detached limestone and marble bluffs. From the general point of view, a granite chain divides Kwangsi

Iron is mined in many places, and especially at Kuanyanghsien. Coal is extracted more especially at Hohsien, Fuch'uanhsien, and Kuanyanghsien—also in the Po-se direction, and very largely indeed in the vicinity of Nanning; a good quality also comes from Yunganchow, three days by creek from Mongkong, 60 miles up river. Tin is mined for around Hochihchow, in the north-west. The tin exported from here chiefly comes from Patpo, on the Hohsien River and in the district of that name. The natives bring it in the form of sand, and it is sold or bartered for provisions, etc., the price working out at about $25 per picul. The smelted product is sold for about Tls. 58 per picul. The metal is nearly pure, being unalloyed, and is given the form of round ingots, about 20 catties by weight each. Sulphide of antimony is found around Nanning and thence to the north-west.

"In the provincial and the local annals it is stated that silver is yielded by the Chiaomu range and the Chienshan range, Ho district; likewise by the Ch'a-hsi range, Li-p'u district. Tin is smelted in three places—Hochow, Fengsheng district, and Fuch'uan district; also in Tungyu and Tungchung, to the north of Linho district. The natives in these places make a livelihood by collecting the fragments of ore, smelting them, and so getting

the tin. Tin is usually found in Ho district and Fuch'uan district. The 'Chiao Nan So Chi' states that the metal is a product of the Two Kwang, and that the output of the Ho district takes the first place for quantity. Copper smelting is carried on at Chu-shan, in Ho district.

"There is iron in Tungnanch'engkang and Peich'aokang, in the district of Wu-ling, department of Hochow," say the annals. "The iron produced in Wuchow, when smelted, is quite liquid in character, and resembles 'flowing water.' When used to fabricate vessels or ware of any kind it is as thin as paper, but yet will not break or crack; the ware so made is therefore light, handy, and durable. The blacksmiths throughout Kwangsi discover Wuchow iron in the smelted copper, and combine them by pouring water upon them; the result is a metal compound of great strength—one of the finest materials to be found in the world.

"White lead is found in the north corner of the Fuch'uan district, and at Pot'ukang, in Lungp'ing district. It is found in pits, in the form of a white and greasy soil, and the natives collect it for mercantile purposes. The product is yielded in inexhaustible quantities, and is used by the women of the Two Kwang to whiten their faces.

Gold like Barley Grains

"Native gold is found in the sandy soil of the fields and moors of Tungshan, to the south-west of the province. It is to be found also in caverns; but will be sought for in vain in mines. The natives make a livelihood by digging in the sand, from which the (auriferous) earth naturally separates in grains—some as big as barley, the smaller more like cuttings of barley cakes. These can be smelted down, and possess a light yellow colour. To reach perfect purity, the product needs re-smelting; but by the process 20 or 30 per cent of the metal is lost. After smelting, the metal is styled 'refined gold.'

"Native gold is found in Jung district, Ishan district, Chao-p'ing district, and T'eng district, along the banks of rivers, and in hill or mountain caverns. Gold digging is carried on in the streams and valleys of Nanning and Annam. In these places the precious metal is found in most abundance. Yunganchow is divided from Annam by a stream; and geese and ducks and other water birds, flying to the Annam bank, and there feeding, have been known to return to Yungan and on excretion, gold has been found in their dung. No gold is to be found on the Kwang bank of the river. In general, gold other than from mines is found sand-like in the soil—the small grains resembling barley cake; the larger, beans; and the largest, the finger-nails. These varieties all go under the one general name, 'native or crude gold.' In time past the people of Chiangnan presented the King of Chaohan with pieces of gold the size of melon seeds; this was in the same category as the above described. Gold bits the size of a fowl's egg have even been found, and such are styled 'mother of gold'—wealthy, indeed, will be those who secure such!

"Lead, in the form of globules, comes from the Hunghua range, Yenchinglu, the Fenghuang range, and the Shihtzu range—Hsuanhua district. At present only the Lusheng range yields plumbago, which is, however, not fit for smelting and for the manufactures.

"Copper is found in Nanning and Choutung, of the Yuchiang intendancy. The ores may be obtained by digging down several feet deep. The savage races of the south have ever been fond of using copperware or brassware. Tzujantung, or native copper, resembles the lead obtained from stone cuttings, and is found in gorges and mountain rocks. It is sometimes angular, sometimes circular, in appearance; and in colour, it is green or yellow, resembling ordinary copper.

"Malachite is found in the copper-producing areas of the Yuchiang; it adheres to rocks, and is of the nature of stone—hence its name. It may be used for drawing purposes, and also for house decoration. In another form it is brittle, and in bits resembling small pieces of clay—this form is styled nilu; in quality it is the poorest of all as it is the cheapest in price. It is not much used by man. Azurite comes from Hengchow and Yungchow, in Hunan; Shao-chow, in Kwangtung; and Nanning, in Kwangsi. It is a compound of copper, and accumulates in mountain gorges and caves. Its green colour is delightful and most pleasing to the eye."

Agriculture and Timber

While the country in Eastern Kwangsi, as a whole, is rocky and not especially adapted for agriculture, the occasional great plateaux and the numerous valleys and river banks—fertilised by annual immersions and tended with much ingenuity and economy—yield paying crops of rice, wheat, maize, millet, buckwheat, etc., and have earned for Kwangsi the title of "The Granary of Kwangtung." Especially rich are the districts around Kweilin, Yulinchow, Hsunchow, and Kweihsien, The mountain sides are, for the most part, uncultivated, and the forests with which they were once clothed have vanished—resultant in great part on the Taiping Rebellion. Much sugar cane is grown in the basin of the West River. This is "very widely cultivated in Kwangsi, and three kinds of sugar are manufactured—white, brown, and candy. The great centres of export are Po-se, Lungchow, T'ienchow, Nanning and Ch'ingyuan and Liuchow, on the Lung-chiang, the northern branch at Hsunchow." Cotton is grown in the north-west, also sorghum, Sesamum, tobacco, and tea. There are likewise considerable plantations of white nettle and of camellias, from the latter of which an excellent oil is expressed.

Of timber trees may be enumerated especially the pine and the fir—these two in great quantities around Liuchow and P'inglo, and of which some passes from Kweilin via the Cassia River to this port and thence to Canton, and some via Hsunchow up to Nanning where it is sold and transported to Lungchow. The Wild Miao and Yao usually do the felling in the Liuchow area, which, however, I am informed, has been largely cut away, and now timber chiefly comes from Kuchow, on the Kweichow border. Timber is one of the most valuable exports from Kwangsi. Large numbers of rafts pass Wuchow on their way to the Canton province. They are often manned by Miao-tzu, for much of the timber comes from the borderlands of Kwangsi and Kweichow, which are peopled by these aborigines.

Timber felled in Kweichow is floated down the Tuchiang to the city of Yunghsien, where it is made up into rafts; and so on the Lungchiang and Hungshui Rivers, which flow through forest-clad regions. These rafts are made up of barked logs, beams, planks, and firewood of pine but no scientific investigation of these woods has yet been made, and the probability is that the export is not confined to pine. As a matter of fact, camphor wood is also exported from Wuchow. Green Bamboos likewise leave the port in large quantities lashed in bundles to the sides of junks. Besides these just mentioned and merely adding that there are, of course, many kinds of bamboo, allusion must be made to the maple, the ebony, a species of oak, the camphor, the teak, and the mahogany; and among miscellaneous varieties may be mentioned the cotton tree, the aniseed tree, cinnamon tree, and the *Aleurites cordata*—from whence comes wood oil (post).

Natural Dyes

The dye plants of Kwangsi are (1) indigo, probably from Indigofera tinctoria, L., and (2) the dye yam (shu-liang), the so-called 'false gambier,' the tuberous root of Dioscorea rhipogonoides. Both are very widely grown. The former is exported in a liquid state, in wooden tubs, mostly by junk to the Canton province. Dye-yams are also largely exported, and they are used in this and the Canton province for tanning and dyeing Native and Foreign cottons, grasscloth, and silk that lustrous brown to dark brown and water-proof-looking colour so much affected by the southern Chinese in summer.

The natural dye is brown, and, if a darker is required, alum or nutgalls are added; and in Canton the juice of green or unripe persimmons is frequently applied as a varnish to the outside of the cloth. That it possesses a waterproofing quality may be gathered from the fact that perspiration does not show upon it, and that to remove dirt only superficial washing is necessary, as the cloth does not absorb the water. The most

important fibre-yielding plant grown in Kwangsi is Boehmeria nivea, L., from which rhea (ramie, or China grass) is derived. The chief centre of cultivation lies between Wuchow and Kweilin, the capital of the province. Jute (Corchorus capsularis, L. is also cultivated, but not to the same extent as rhea; it is used for making rope and twine.

It is estimated that from 200 to 300 piculs of catgut are annually manufactured in the Pinglo prefecture, and in the districts of Kuei, Tsenchi, and Jung, and exported principally to Japan to be used for fishing-lines. It is valued at from Tls. 250 to Tls. 260 a picul (133-1/3 lb.). It is made from the liquid secretion of a silkworm which feeds on the leaves of the camphor tree. When the worm is ready to spin its cocoon, it is removed from the tree, cut in two, and steeped in vinegar for a quarter of an hour. By this means the secretion is sufficiently hardened to be drawn out into strings from 3 to 5 feet in length.

Lizards are very numerous on the hills round Wuchow, and are caught and exported, living and dried, for use in Chinese medicines. Pigs are more abundant than dogs in the streets of Wuchow, and become exceedingly fat. They are sent eastwards in large numbers to the Canton province.

Silk is New Industry

Sericulture is a comparatively new industry in Kwangsi, and while supplies have still to be imported from Canton, the provinces are dotted with mulberry plantations, which become less numerous as Kwangsi is entered. Here the mulberry is not allowed to grow into a tree; the sprouts which rise to a height of 3 to 4 feet, and bear fruit, are cut down in November, and fresh sprouts appear in spring and summer. The silkworm eggs are annually brought to Kwangsi from the Shuntak district of Kwangtung. Both white and yellow silk are produced.

Deer skins are brought down in thousands from the west of the province and exported. They are of tawny colour, and derived from the mouse-deer. They are used in the manufacture of tobacco pouches and other small articles of daily use, being more durable than the ordinary leather. Tiger skins (tigers abound in the province) are occasionally to be seen in the market.

Star aniseed is called pa-chiok ('eight horns' or 'corners') by the Chinese, from the shape of the fruit, which consists of eight seed-capsules arranged to form a star. The tree *Illicium verum*, which produces this fruit occupies a comparatively small area, being confined, so far as is yet known, to Tongking and the south-west of Kwangsi. Aniseed oil is extracted from amber-coloured seed. It is alleged that, owing to the destructive method of collecting the fruit, there is a good crop only once in three years. Complaints are made that the oil is frequently adulterated with kerosene.

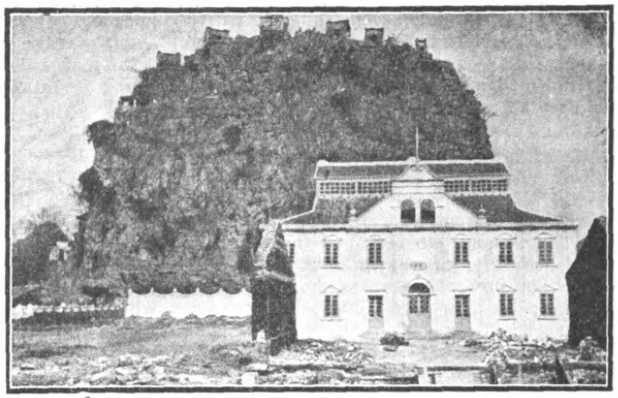
The cassia-producing districts of China are situated in the southern borderlands of Kwangtung and Kwangsi provinces, in the south of the West River. The cassia of commerce is the bark of *Cinnamomum cassia*, but twigs and buds of the tree are also articles of trade. Although a thicker bark is exported under the name of cinnamon, there can be no doubt that it is the bark of old trees. The market town of Tawu, in the Pingnan district, west by south of Wuchow, is the great centre of the trade, where 50,000 to 60,000 piculs are annually disposed of.

Molasses comes down to Wuchow from the sugar-producing centres of Kwangsi, principally from Liuchowfu and Ch'ing-yuan-fu, and is used here and in the Canton province for preserving fruits and vegetables, dates and ginger. Moxa is frequently described as crude camphor, but, although it is a greyish white powder smelling strongly of camphor, it is not derived from Cinnamomum camphora, which is fairly abundant in this province. It is distilled from *Blumea balsamifera*, and the centres of export are Nanning and Po-se. It is a valuable product, costing as much as Tls. 200 a picul, and is used in medicine, perfumery, and in Hongkong it is, I understand, converted into camphor oil. Nutgalls are derived from *Rhus semialata*, and are used in tanning and dyeing. The centres of export are Nanning and Liuchow.

Large Annual Tonnage

The number of Native craft of all classes passing up river annually is said to average 13,200 boats, of which 4,400 contain cargo and 8,800 are empty; the number of Native craft of all classes passing down river annually is said to average 15,600 boats, of which 12,600 contain cargo and 3,000 are empty. The tonnage is hard to compute—perhaps annually it may reach 600,000 tons.

THE GREAT MIDDLE SCHOOL, KWEILIN



HALL FOR THE PROVINCIAL ASSEMBLY AT KWEILIN

Native banking agencies are divided into the usual two classes, the local banks and the Shansi banks. Local banks are owned and managed mostly by natives of Kwangtung province, and there are here 12 such establishments, of more or less standing. These grant drafts on Hongkong, Canton, and Fatshan; transact various kinds of exchange business; take in money on deposit, etc.; and make advances against cargo and property of every description. The rates of interest for money placed on deposit are by no means uniform, some allow from 8 to 12 per cent per annum.

Railways are to be looked for mainly from the south, and the extension of the Haiphong-Hanoi-Langson line to Dongdang was completed and opened on the 14th July, 1901; surveying was proceeding. with the intention of connecting Yunnanfu with Hanoi and Haiphong. The gauge of the active lines is 1 metre; the track is a single one; there are stations at military posts about every 10 kilometres; and the engine drivers are Annamites. A map of 1898 gives the following lines affecting this part—but the surface of this region is not that of a piece of paper (1) from Tongking up the Red River Valley to Yunnanfu (say 200 miles); (2) Langson-Lungchow-Nanning Railway (length, about 100 miles); (3) from Pakhoi inland,

presumably to Nanning (length, say, 120 miles). Likewise must be mentioned the discussed project from Burma to Yunnan. Perhaps it will be of interest to give comparative times by rail at say 30 miles an hour (direct routes), and as by present transit, to certain centres adjacent to Wuchow:—

	By Rail.	*By Present Means.*
Kweilin	6 hours.	18 days.
Kweiyang..	15 hours.	40 days.
Nanning	9 hours.	20 days.
Canton	7 hours.	1½ (by steamer).

The Sancha silver mine, situated in the district town of Kwei, is reached by launch from Wuchow to Kweihsien, thence by sedan chair about 16 miles. It has been exploited by a Chinese company in Hongkong—the Hua Hsing Kung Ssu,—without success. Tls. 200,000 worth of machinery has, it is stated, been imported for the working but, by reason partly of want of funds, and partly of the difficulty of the road, a large number of the heavier appliances have been left in Kweihsien. Starting with a capital of Tls. 600,000, the company lost something like Tls. 400,000. The samples sent to Hongkong for assay produced excellent results, but on working the ore the deposits were unsatisfactory; the shareholders did not therefore see the point of further disbursement. A good deal of money has also been wasted on unsuitable experts. A mining engineer has reported of this mine as follows:—

"The ore consists of large bodies of galena, sulphide ores and copper, the latter consisting of native copper and copper pyrites. Gold is extracted from the silver bullion, averaging about 1 to ½ per cent. The lode is about 5 to 6 feet wide, well defined, and can be traced from the T'aip'ingting Mountain to over 26 miles to the north, the line of reef being north and south. It has been worked on the surface by the Natives, in places, for over 200 years, and chiefly on the high ground about Tingp'ing; on the lower levels, owing to the water, they were unable to get down beyond 60 feet to the ore body.

"The present workings at Sancha, called the Lienfu mine, are down about 320 feet, and the company is still sinking on a good body of rich ore, while the upper levels are being stopped out. The present output is about 10 tons of ore per day, hand hauling; but a main shaft is being put down, when the output will be about 100 tons. All the ore is smelted on the mine, the plant consisting of a blast furnace of 50 tons capacity, 100-ton wasting furnace, 100-ton chloriantion plant, cupellation furnaces, etc. The present management is erecting a concentration plant.

"On account of the ores being of a complex nature, dressing is required; and want of this was one of the causes of the mine not paying—another reason was the presence of large quantities of zinc blende, entailing a great loss of silver in smelting. Besides this mine, there are numerous others which have not been opened, beyond a little surface work by natives.

"Coal, copper, tin, antimony, lead, and plumbago are plentiful in this district, and only want capital and proper mining laws to make them a large source of revenue to the country. The native method of working the ore is very crude. Only sufficient rock is removed to get at the ore; and, in consequence, when they are down into the better class of ore, the air, for want of ventilation, becomes foul and prevents the raising of more ore. The smelting furnaces consist of round clay mounds, about 2 feet in diameter, and holding about 1 picul of ore; and the blast is supplied by wooden bellows.

"The ore is smelted with charcoal, lime being used for flux, and, owing to its not being roasted previous to smelting, the zinc carries off a large percentage of silver. The lead is cupelled for the extraction of silver on beds of ash made from grass and broken fern, and is heated by charcoal, while the blast is supplied by bellows. Here, again, a large percentage of silver is lost—the resulting bullion being about 920 fine. There are hundreds of these furnaces working in the district, and the fumes given off during the process cause a great deal of sickness amongst the natives, owing to the presence of the lead and arsenic."

It remains to add a few words concerning the management of the two coal mines at Talingshan, in the district of Fuch'uan, and the lead and tin companies. For exploiting the first named, two companies were started at Honam, Canton; and the agents of the present company here are two firms—Kuang Sheng Ch'ang and Yuan Heng Li. There is a lead mine in the Kueip'ing district, operated by the Hsing Pao Kungssu, a Chinese company, with offices locally; there has been an issue of 1,000 shares, at $100 each, placed on the market in Canton and locally; the head office is in Canton. At Chienchuling, in the Fuch'uan district, tin mines have been opened by a local company—the Hsing Yuan Kungssu,—while at Niutaoshan a company—the Chung Hsing T'ang—is similarly exploiting.

Present Trade Conditions

To recapitulate, the province, as a whole, is both at present productive and possessed of the greatest potential capacity in its mines. It has yet no great cities, nor is it thickly populated, nor is there much outward indication of wealth. Certain artificial obstacles, such as banditti—and natural ones, such as droughts—have been alluded to, and the two are greatly complementary. The trade, however, is rather in posse than in esse, and is at an experimental stage. There is, I believe, a medical dictum that any human organ disused may lapse into inanition; and used, gains vigour. That is the position of trade hereabouts—it is gaining vigour.

Of Wuchow itself, it has been said, in general terms:—As a port of transit Wuchow will take high rank. Imports for a considerable and growing demand will enter here, and up-country produce must pass down, since riverine unrest will alone drive this trade through Tongking, and on this trade Foreign bottoms have as yet little hold. With altered fiscal regulations great changes are expected. Wuchow, as the point of departure for the trade of three western provinces, will draw imports from Hongkong; direct exports are now few, but this must, and inevitably will change. Wuchow is the door through which all merchandise to and from the west must pass—geographically it commands the whole province, and it will always remain a great port of transit, but the mountainous nature of the country all round and up to its very center, thereby seriously cramping a growing population, will keep it from ever becoming a consuming center or a large city.

As regards Pakhoi, probably no means can make it other than it at present stands in relation to this port, Wuchow, save the projected railway; it will probably more and more simply tend to feed that portion of Kwangtung in which it lies. As regards Lungchow, a railway from Tongking might also give it exceptional vitality, though the effect of railways is, no doubt, a difficult problem to juggle with. Mengtsz, via the Red River, already offers an alternative route of importance. In any case, it supplies one province which really lies without the Wuchow sphere—Yunnan; and as regards Kweichow, Wuchow more and more, rather than less and less, supplies it. Mengtsz will grow in ordinary proportion, but will not of itself affect Wuchow. The mart of Nanning might alone seriously affect this port—it will take, perhaps, one-half of both its export and transit trade.

The only difference caused by the opening would be that a certain proportion of duties now paid at Wuchow will then be levied at Nanning. Here, again, the rail is an uncertain factor.

Water versus Railway Traffic

The first Trade Report on Wuchow stated:—"The trade of Wuchow may in future be adversely affected by French railway extension from Tongking. The line to Nanning will no doubt in time become an accomplished fact, and then competition will commence in earnest between the rival routes to that place. It is not certain, however, that the rail will be cheaper than the river. At present, a bale of cotton yarn, for example, can be sent to Nanning from Hongkong via Wuchow for about $7, all duties included; and it remains to be seen if the route via Haiphong will be as cheap. I scarcely think so, considering that there will be between 200 and 300 miles of railway carriage to pay for. The transport will be more rapid; but the Chinese will not care much for this advantage, except they can have that of

cheapness also." And while the navigable conditions to Nanning are an obstacle, yet, perhaps, if particular rocks be removed (no very difficult operation) and the channel straightened, probably a special class of lighter, of large carrying capacity, for towing purposes, will be constructed, and cargo go just as well by the West River. With its central position and its easy touch, Nanning—within its own zone—will suffer even less than Wuchow from the competition of either Pakhoi, Lungchow, or Mengtsz.

In sum, then, the trade of the province as a whole will increase, because of its present and latent resources and because of commercial stimulus; the trade through Wuchow, as a natural entry and exit to the province and its neighbours, will grow, first, with the provincial trade on the one hand, and, secondly, so long as Hongkong remains the great centre it now is. But the opening of Nanning will, in any case, affect Wuchow as a depot—still more so if there be navigable through communication with Hongkong; and then conditions would be something like moving Wuchow to Nanning. Artificial routes, such as railways, will, if making carriage cheaper than the natural—and provided (e.g.,) unless and until there be a similar route from Canton to Wuchow,—divert trade elsewhere.

Much depends on what engineering may accomplish in a difficult region—what, for example, may be the effect of improved roads and motor transit; on the other hand, how may water transit be improved and utilised; and here I must recall the well-known words of Mr. Colborne Baber regarding engineering feats such as piercing Mont Cenis tunnels and erecting a few Menai bridges, by which transit in Southwestern China "would, no doubt, be much improved."

A PANTISOCRACY OR WHAT IN CHINA?

The tremendous and unprecedented displays of loyalty and patriotism which are increasingly being manifested by the British in connexion with the pursuance of the great war are causing many thoughtful Chinese to make cold and calculated comparisons between the spontaneously fervid attitude of the British the world over towards their national problems and the frigid demeanour of the Chinese towards China and her internal and external crises. The comparison is unfortunately always unfavorable to the Chinese, and many confess with bitterness that the oft-repeated allegation that there is neither loyalty nor patriotism in China has much to sustain it. A Chinese newspaper, the *Ta Kung Pao*, writing on the phenomenon recently, has perhaps placed its finger on the fundamental cause of the indifference to national problems which characterises the Chinese. In commenting on the proposal of the British to float a colossal loan of £2,000,000,000 the paper asks: "Why are the people of Europe so patriotic and ready to come to the aid of the Government in time of need so magnificently? Are the people of China different from the British?" And it answers its own queries. "The fact is not," it says, "that our people are less patriotic but that the Government is less trustworthy. If the Government should demonstrate its honesty in using the people's money, we have no doubt but that we would be just as willing to unloose our purse strings to help our country as the British."

Here, indubitably, is the fountain head of all of China's internal difficulties—the untrustworthiness of the Government—though in specifying "the Government" the paper does not merely mean the circumscribed Cabinet which assembles in Peking, but the whole of officialdom, throughout the length and breadth of the country. And why is officialdom regarded as untrustworthy? For the very simple reason that for ages past the mandarin, the petty official, the tax collector, and the vicious yamen runners have regarded every citizen of China as fair game for plunder. Officialdom has been to the Chinese as a huge, slimy octopus whose tentacles have been considered privileged to explore not only the treasure boxes of the rich, but the meagre savings of the working men and the lean coffers of the poor: privileged not by right but because the instruments of might and the powers of persecution, were at its disposal and nefarious deeds were possible because of an absence of easy means of redress such as exist in developed and organized modern States. No where in the world, perhaps, has the inarticulate man with the hoe suffered so much from merciless and vampirish mandarindom as in China. Prior to the organization of the Maritime Customs and the Salt Administration under foreign control there was not a fraction of system in the collection of taxes. The officials battened on each other and on the people, but first, last, and all the time the people paid. From the Viceroy of the Province down to the meanest, dirtiest, foulest coolie who could contrive to invest himself with brief authority as a yamen runner, the right was claimed to a large or small share of the revenues collectable, and it is certain that as much as sixty to seventy-five per cent of the money actually bled from the people stuck to the innumerable hands through which it had to pass on its way to the Treasury. Nor were these expert filchers of the people's wealth compunctious. Where legitimate taxes failed to satisfy their greed, they invented others. Different mandarins devised different methods. No phase of public existence was too insignificant to tax; no sum too small to impose. Money ostensibly extracted for roads and ordinary public services was brazenly misappropriated. The tax-collector demanding dues allegedly for road building would cause punishment to descend upon the one who would dare to point to the bogged mule drowning in the mire before his very door. Development of enterprise was killed. What little industrial work was done struggled along in the face of the cruellest oppression. No factory or mine could exist and show any sort of profit without being in danger of official seizure. The private citizen was taught that it was his duty to yield everything on demand to the officials, and the officials were able to extort money and command silence because the people had nowhere to turn for help or protection. The system of extortion thus became recognised, and only when the very limit of endurance would be reached would a long suffering section of the oppressed populace in this district or that rise and tear the yamen down about the ears of the insatiable official who failed to recognise that forced title to the very grain was not compassible with covetousness of the husks as well.

So accustomed to this system have the Chinese become by centuries of imposition that officialdom stinks in the national nostrils; nor has much been done to improve conditions since some light dawned as a result of the Revolution. There are still rampant in the land officials who claim the right to attach themselves to the public revenue, and every district magistracy is cursed with innumerable runners who still batten upon the people. Even yet Chinese are not free to enter upon enterprises in the country and be protected from official demands for illegitimate spoils. We have particularly in mind in this respect some progressive merchants who desired to establish an oil pressing mill near the Yangtsze, in Kiangsu Province, about one year ago. Likewise some other merchants who had erected a flour mill in the same region. The would-be oil manufacturers were prevented from erecting the mill because they would not pay the squeeze demanded by the local officials, and the flour millers were not permitted to turn their rollers until they had paid a large and extortionate "fee." The oil manufacturers ultimately approached Peking offering to pay a fourth of their profits annually to the officials if that would be fixed as the maximum "squeeze" and if they would be guaranteed protection from fleecing by minor officials and yamen runners. These are but two instances, and no doubt the country is full of others: A general remark which received support before this could be put into type, for there appeared a petition in the Peking papers from merchants who deemed themselves interfered with or obstructed in their efforts to make arrangements for the purchase and smelting of brass cash. The final paragraph of their petition was the

Therefore it would seem that even a band of brigands on the border of Szechuen can disturb commerce sufficiently to raise the price of carpets and give a less lasting tone to milady's perfume. But it will not be long now before Western Szechuen is gathered again under the hand of the military governor and the traffic in wool and musk will be resumed. Then when the two years' store of these commodities is released, prices ought to be lower, for the wool at least. Whether this will also affect the price of carpets, the form in which the wool appeals more strongly to the consumer, is another question. As for the price of perfumes, it depends on other factors than the cost of raw materials so that while the quality may resume its former fragrance, the outlay of the purchaser doubtless will be just the same, when the last Kuan hsien bandit is decapitated.

CHINA'S RAILWAYS IN 1916

The complete returns of China's railways for the year 1916 have not yet been made available, but we are able to give the earnings of the most important lines. It is satisfactory to note that the sum total is an increase over the working of the previous year, though it is disappointing to see the Peking-Mukden line, one of the principal earners, showing a decrease. That the Tientsin-Pukow line shows an increase is encouraging, though there is wide ground for complaint with regard to the scandalous manner in which traffic is conducted. Not that this is the fault of the railway authorities. It is due chiefly to the military chiefs installed at Hsuchowfu and Pengpu. These brilliant generals regard the railway as their private property and abuse it to the utmost. Fares of officers and men are not paid, and freight traffic is upset by them. Continual abuses are witnessed by travellers on the line—abuses which the railway people are completely powerless to prevent—and despite the fact that most trains are filled both with passengers and freight, still the line does not pay. It is certain, however, that if the Government could remove the ban of military control and place the management in competent hands the line would at once spring to the position of being one of the chief earning factors in the system. The Peking-Hankow railway still takes the blue ribbon for results, the increase over the previous year being the substantial one of over three million dollars. Though it is not yet recorded it may be stated that the Shanghai-Nanking railway also came out well, the line showing a profit on working for pretty well the first time since its establishment. The following returns are so far available:

Name of Railways	Revenue of 4th year of the Republic	Revenue of 5th year of the Republic	Comparison with 4th year Increase	Decrease
Peking-Hankow	17,141,095.00	20,150,000.00	3,008,905.00	
Peking-Mukden	15,277,931.00	14,362,296.00		915,635.00
Tientsin-Pukow	8,529,038.00	9,492,348.00	963,310.00	
Chengting-Taiyuan	2,073.000.00	2,154,000.00	81,000.00	
Taokow-Chinghua	633,400.00	827,100.00	193,700.00	
Canton-Kowloon	835,485.00	788,763.00		46,722.00
Peking-Suiyuan	3,613,494.00	3,960,300.00	346,806.00	
Chuchou Pingshang	677,435.00	738,545.00	61,110.00	
Shanghai-Nanking	Report not yet in but it is understood that the revenue of these lines all show considerable increase over former years.			
Sh.-H.-Ningpo				
Kirin-Changchun				
Kwangchou-Sansui				
Changchow-Amoy				
Total	48,780,878.00	52,473,352.00	4,654,831.00	962,357.00
		Net Increase	3,692,474.00	

CHINESE SALT REVENUE FOR 1916

In our last issue we gave the approximate returns of salt revenue for the year 1916. We are now able to give the final totals which show that the revenue paid into the Group Banks during the year amounted to $72,440,559.89, which, added to the amount in the Banks at the beginning of the year, and plus interest earned during the year, made a grand total of $97,104,793.48. From this amount the Government was able to receive for its own purposes the handsome sum of $52,226,185.48, money made available to it when it was in direct straits, and without which it would have found it difficult to escape bankruptcy. And despite the fact that the Government was able to receive such liberal assistance the whole of the obligations on the salt revenue were paid and at the end of the year there still remained in the Banks the sum of $19,543,804.67. In appreciation of this splendid result we hear that the Government paid a highly deserved bonus to Sir Richard Dane, and we expect to hear very shortly that the Government has also set aside a bonus for distribution amongst the staff who have assisted to produce the result. The figures are as follow :

Balance in Group Banks on January 1, 1916	$24,385,191.22
Revenue paid into Group Banks during 1916	72,440,559.89
Interest, etc., received during 1916	279,042.37
	$97,104,793.48
Charges and obligations:	
Boxer Indemnity	$10,071,371.07
Chihli Provincial Bonds of 1910	725,973.90
Hupeh Provincial Bonds of 1909	150,509.78
Chinese Govt. 5% (Crisp) Loan, 1912	2,383,368.74
Chinese Govt. Reorganization Loan, 1913	11,580,681.91
	$24,911,905.40
Miscellaneous withdrawals	47,727.66
Releases to the Central Govt. during 1916	52,226,185.48
Transfer charges and losses by exchange	375,170.27
Balance with group banks on Dec. 31, 1916	19,543,804.67
	$97,104,793.48

JAPANESE TO INSPECT EXPORTS

Japanese newspapers state that there has been considerable criticism, both by importers in various parts of the world and by Japanese consuls, concerning the inferior quality of Japanese manufactures. Both consuls and trade organizations claim that although, owing to conditions created by the war, the country has an exceptional opportunity to supply the markets of the Orient, the South Seas, and Russia with innumerable articles formerly sold by the belligerent countries of Europe, the local manufacturers and exporters are throwing away this opportunity by supplying goods of inferior quality.

These complaints are largely regarding goods from Kobe and Osaka and both the local authorities and the Japanese Government are attempting measures designed to improve the quality of goods exported by means of official inspection. Japanese newspapers state the Osaka Prefecture has already instituted an official inspection of certain goods destined for export, among them being soap, glassware, and underwear. Other articles are to be added later as the inspection system is extended. The manufacturers of enamel ware in the Prefecture objected to the inspection, however, on the grounds that it would place them at a disadvantage unless the wares manufactured in other Prefectures also were inspected. The objection demonstrated the necessity for a more universal inspection, and the Commercial and Industrial Bureau of the Department of Agriculture and Commerce of the National Government now is compiling regulations intended to prevent the exportation of goods of inferior quality. The method proposed is the appointment of official inspectors to be attached to every trade guild, all goods being submitted to their inspection before exportation. All the guilds with the single exception of that in the glassware industry express their approval of the proposed measure.

DEVELOPMENT OF SZECHUEN

By American Consul M. S. Myers, Chungking

The most striking obstacle to the healthy expansion of the trade of this Province is the absence of adequate and dependable transportation facilities. Szechuan Province is the largest, and reputed to be the richest, of all the Provinces of China, and an enumeration of its products would also probably show them to be the most varied. Many of them are produced in far greater abundance than can be consumed locally, and the production of these and of others as well could readily be expanded were cheap transportation available.

In the absence of any governmental data on the economic conditions of the Province, statements and estimates as to the volume and value of its products may easily prove misleading. However, I quote with a certain degree of confidence the following from the British consul general at Chungking:

Szechuen lies at the very back of China, but its remoteness would be of less consequence were it readily and easily accessible. From a commercial and paying standpoint, through steam navigation of the upper Yangtze can never be realized.

It may be asked, "What does it really matter if the prospect of steam navigation on the upper Yangtze has to be abandoned? Junks will still continue to ply, and trade will go on as before."

It matters much to the Province of Szechuen, which, with its industrious population of 45,000,000, is rich in valuable products, but is unable to get proper value for its money. The Szechuenese are particularly fond of foreign goods of all kinds, but they are debarred from a free indulgence in them by the heavy freights with which they are, under present conditions, necessarily burdened.

In December, 1902, the freight per catty from Ichang to Chungking was 23 cash, that is to say, about £4 a ton. Even £5 is not an unusual freight for this stretch of 400 miles. The foreign resident here has to pay 10 dollars 30 cents for a case of kerosene oil which in Hankow costs only 3 dollars 40 cents, and a 4-pound can of Hongkong cube sugar, worth about 60 cents in Shanghai, can not be had for less than 3 dollars 40 cents. As with these, so with all foreign goods. They are expensive luxuries, which only the rich classes can procure.

The advancement attained in marine-engine construction now enables the Ichang-Chungking section of the river to be navigated by steam with a certain degree of regularity during eight months of the year, but all the dangers to navigation still exist and are attested by the absence of insurance rates and the high freight rates which the steamers demand. These rates are on the average about double the high rates charged for junk transportation, and far higher than the railway rates now obtaining on the railways in China. In fact, these railway rates are even considerably less than the junk rates.

Proposed Ichang-Chungking Railway a Necessity

The solution for the transportation difficulties under which commerce now labors is the proposed railway from Ichang to Chungking. Such a railway would carry nearly all of the present river-borne traffic owing to its superior advantages over river competition in safety, speed, and cheapness. Industrial development of all kinds would be given impetus by the removal of the existing obstruction to transportation of heavy machinery and the products of industrial establishments and mining enterprises.

The opportunities for expansion of American trade which would result from the construction of this line by American capital and ingenuity would be manifold. Some of the richest mining regions of Yunnan are in the drainage area of the Yangtze River, and it is by means of this line that these rich silver, copper, and other mineral deposits may be equipped with modern machinery and their products brought to the markets of the world. Not only will it mean the employment of American engineers and purchase of American railway materials, but its successful completion will do much to impress indelibly upon the minds of these provincials the efficiency of American methods and the high standard of American materials. This, together with the present kindly feeling entertained toward American enterprise, will stimulate the demand for American machinery and mining equipment and American merchandise generally.

It is axiomatic in these days of international finance that trade follows capital. The fact that European capital will be occupied in the rebuilding of Europe after the war for some years to come will give America the opportunity of firmly establishing its commercial relations in this region, provided railway construction and commercial endeavor are jointly and whole-heartedly taken in hand.

Insufficiency of Junk Traffic—Excessive Freight

The importance and the obvious necessity of this line of China can be substantiated by any one of a number of reasons. Conditions that have existed since December, 1915, clearly demonstrate the value of a railway connecting this city, the great commercial emporium of Szechuen, with the lower river, both to Chinese political and commercial interests and to foreign commercial interests. During all this time, owing to the movement of troops up and down river, the transportation of cargo was at a standstill, and this will continue to be so until the autumn, as the high water increases the difficulty and danger to junk traffic to such an extent that transportation at this time is rarely attempted. Although steamers are now resuming their services, their cargo carrying capacity is so small that scarcely an impression will be made on the goods awaiting shipment. Moreover the excessive freight rates charged debar all but the most valuable cargo.

American Enterprise Should Follow the Opening of this Railway

As soon as construction on this railway is commenced American commercial interests should make preparation for reaping the full benefit to be derived from the employment of American capital and from the natural development and increased business which will result from the presence of superior transportation facilities.

American commercial interests would do well to establish connections, and in some cases branches, especially in machinery products, at Chungking, where at least miniature samples may be kept and demonstrations given. It is certain that our wide-awake competitors will be here long before the railway is completed, and if the United States is to obtain its share of the trade equally intelligent and efficient efforts will have to be exerted.

Prominent Chinese often express a desire for closer commercial relations with the United States and a desire to see American firms established in Chungking. This friendly spirit of the Chinese should be cultivated and not allowed to die from disregard and neglect. With the construction of this railway by American capital unlimited commercial possibilities await the initiatory efforts of the American merchant, but unless American endeavor is whole-heartedly and intelligently applied, others will reap the rich harvests engendered by American money and ingenuity.

In addition to the above, efforts also are being made by the American Consul General, Mr. E. S. Cunningham, of Hankow to stir up financiers of the United States to supply funds for the continuance of work on the I-Kwei line that will solve the Yangtze gorges difficulty. He says in a recent report:

American Section—Railway Construction Awaits Funds

The I-Kwei section of the Hukuang lines provided for by the Hukuang loan, is known as the American section, is not being constructed because of want of funds, but by the end of 1915 the survey of this line was made not only to Kweichowfu, but for an extension to Chengtu. It is regretted that American financiers have not provided funds for the construction of the I-Kwei section of the railway. As a financial proposition it is considered sound. The Chinese Government is only waiting for the money to construct the section as a military necessity and a commercial obligation to the hinterland that would be opened up in Szechuen and beyond. It is as fine a business opportunity as exists in China, and but for lack of funds due to the European war this section would have probably been well under way from loans provided from the United States conjointly with other nations. The line will parallel a river which can not be a carrying competitor, and it will open up a country rich in agricultural and mineral resources and having an industrious and frugal population as great as the continental United States in 1900.

A railway is a civilizer and trade producer, because it brings civilization and its markets nearer to the new districts. This section would make possible the development of a Province abundant in natural resources, creating a larger market for foreign products, and making possible sales of native products now out of reach because of lack of transport. It is not expected that there will be great development in railway construction in this consular district until the Chinese Government is able to make additional arrangements for the securing of funds, which, during the continuance of the European war, are only obtainable in the United States. The question remains, Will America avail itself of trade opportunities as great as were ever offered now when competition is merely nominal?

INDIGO IN MADRAS

The Government sowing report on the indigo crop of 1916-17 in the Madras Presidency, just issued, states that owing to the large profits made last year there has been an important increase in the area under indigo in the current year. Good seed has been generally available, although the prices have ruled very high. The total area now reported for the current year is 344,300 acres. The increase is especially noticeable in in Kistna, Guntur, Nellore, and Kurnool, but occurs everywhere. The final forecast report on indigo in 1915-16 placed the area sown in that year in the Madras Presidency at 182,800 acres. Final figures for 1915-16 are not yet to hand for all districts, but it would appear that the area actually cultivated with indigo last year was about 202,000 acres. The season has been generally favorable to the crop so far. On an average of the five years ending 1914-15 the area under indigo in the Madras Presidency has represented 33.4 per cent of the total area under indigo in British India.

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Proposed Railways in Manchuria.—With the assistance of foreign engineers, the Chinese have surveyed several projected railways in northern Manchuria, including the Tsitsihar-Mergen-Sakhalin and the Harbin-...ailusien-Mergen-Sakhalin railroads. The first section, the branch line from Tsitsihar to Mergen, covers 240 versts (159 miles). The second section, or main line, from Harbin to Sakhalin, covers 700 versts (464 miles), as follows: From the shipyards opposite Harbin to Hulanchen, 20 versts; Hulanchen to Suihaisien, 80 versts; Suihaisien to Hailusien, 105 versts; Hailusien to Erkeshan, 90 versts; Erkeshan to Dedur, 50 versts; Dedur to Mergen, 125 versts; Mergen to Sakhalin, 230 versts. The second section has two branches: The first direct from Harbin, and the second from Harbin through Lansiensien-Tsingansien-Baitsuansien, district Manai-gun-Mergen to Sahaliang, which is shorter by 70 versts (46 miles) than the line through Suihaisien, Hailusien, Erkeshan, Dedur, and Mergen to Sakhalin. The line through Lansiensien and farther does not coincide with the interests of the Chinese Eastern Railway, because from Bai-tsuiansien a large part will be parallel to the Chinese Eastern Railway at stations Duichinshan, Mangou Sun, and Anda, and will at the same time go around the rich Tunken region (Hailusien), and especially the newly settled districts of Tunbeisien, Uyounichien, and Luimingsien. The country through which the projected Tsitsihar-Mergen-Sakhalin line will run is a plain from Tsitsihar to the village of Sinanlin, at the foot of the Little Hingan range, and is mountainous from Sinanlin to Sakhalin (80 miles). In the level section the line follows the present Tsitsihar-Aigun road. On this division it will be necessary to build three large bridges: One over the Uirgol (Huyouerhe) River, spanning 140 feet, and two over the Huelerhe River, spanning 350 feet and 140 feet, respectively. The soil is generally clay, but stony toward the end of the division. The excavation work, it is calculated, will amount to not more than 21,000 cubic feet per verst (31,700 cubic feet per mile).

On the second division from the village of Sinanlin the rise is 980 feet in 20 versts (about 74 feet per mile). Afterwards there is a drop of almost the same distance to the village of Erkzan. On this division four bridges must be built spanning from 140 to 210 feet over the Lanchanke, Kumurhe, Shenke, and Ehe Rivers. In this division are found rubble, common soil, and cliffs. The average excavation is calculated to be up to 3,500 cubic feet per verst (about 5,300 cubic feet per mile). For the drainage of rain water it will be necessary to build small bridges and culverts spanning in all 350 feet, and to protect the embankments from washouts it will be necessary to dig about 100 versts (66 miles) of hill canals (excavation 3,500 cubic feet per verst). Under such conditions, according to the preliminary calculations, the cost of building the new railway will be 30,000 to 40,000 rubles per verst ($23,300 to $31,100 per mile at the normal exchange rate of $0.515 to the ruble). The Chinese Government has decided to arrange so that the right of way be obtained free, by allowing the owners of land along the proposed railway to receive in another place twice the area taken for the railway. This will be a great saving because along the line for a distance of 200 to 230 miles in the direction of Hailusien the country is densely settled.

Chinese Eastern Line Lacks Cars.—Several thousands of cars of the Chinese Eastern Railway have gone into Russia and failed to return, say Japanese press reports, and the through goods for import to North Manchuria lying along the railway now exceed 3-400 carloads or 10,200 tons. Owing to the Chinese Eastern Railway shortage of goods cars the Japanese in North Manchuria and Siberia are said to be experiencing scarcity even in such bare necessaries as rice.

At present the import trade at Vladivostok stands virtually stockstill, and every bit of the railway carrying capacity is being taken up by goods for war purposes. Once goods cars reach European Russia they are detained and the Railway authorities find it extremely difficult to increase the number of goods cars for service on the Harbin-Kwanchengtze section. Even if through goods were to be carted all the way from Changchun to Harbin, as some such scheme is underway, the goods brought by that means would have to lie at Harbin because of the lack of cars obtainable on the railway beyond Harbin. The South Manchuria Railway is said to have requested an immediate increase of goods cars up to 125, the number previously agreed upon. The S. M. R. people, for their part, will re-enforce the working gangs at Changchun junction station and will even raise the wages of the coolies to the end of facilitating loading and unloading of cars.

Nicholaievsk's Port Facilities.—Upwards of 30,000 tons per annum is the estimated capacity of Nicholaievsk which the Russian Government has opened as a new Pacific terminus for the Trans-Siberian Railway. This port is at the mouth of the Amur River, near the head of the Gulf of Tartary, about 850 miles north of Vladivostock. Goods received here will be transported inland up the Amur River to Stretyinsk, which is reached by a rail-road that connects with the Trans-Siberian line. It will thus help considerably to relieve the pressure on Vladivostock which has been the only gateway to Russia unmenaced by hostile warships, aside from the route through Manchuria to Harbin which is of very limited assistance.

The Trans-Siberian Railway is one of the great engineering achievements of the world, says Paul P. Foster in an article in the Review of Reviews. He calls it a monument to the vision, perseverance, and skill of the Russian engineer. The double tracking of this 6,677 mile-long railway was begun some years ago. When the war started thousands of additional men were set to work to hasten this vast undertaking, and the second track has recently been finished, in time to facilitate the shipments of the enormous stores of artillery, projectiles, explosives, machinery, and goods of all kinds from the United States, Japan and England. Thirty-one million tons of freight arrived at Vladivostock in the first four months of 1915, compared with 2,195,000 tons in the corresponding period of 1914. Thousands of workmen have been struggling night and day to enlarge the docks and port facilities, and the wharves are being trebled in length to accommodate at least forty great freighters at one time. Some of this congestion will be relieved by the routing of shipments to Nikolaievsk which has become chief port of supply for the mining district of Chita and other prosperous Siberian communities previously served *via* Vladivostock.

Shantung and Tientsin-Pukow Traffic.—The question *re* the resumption of through traffic between the Shantung and Tientsin-Pukow Railways has been pending since the occupation of the former Railway by Japan in 1915. The first official meeting was held on Nov. 15th, 1916, between Mr. Kitada, of the Shantung Railway, Mr. Huang, of the Communications Office, Peking, and Mr. Chou, of the Tientsin-Pukow Railway. Nine meetings have been held since and an agreement had been nearly reached (on January 20) to restore the connecting arrangements to what used to obtain under the German regime. According to the agreement, all cars of one line fully loaded with through goods are to be admitted to the other line, whilst those only partially loaded shall have their contents transferred to the other line at the junction station. As regards the through passenger traffic, the Tientsin-Pukow Railway people thought it unnecessary and the matter has been put off for further discussion.—*Manchuria Daily News.*

South Manchuria Ry. Estimates.—According to the Japanese press reports, the South Manchuria Railway's estimates for the next Fiscal Year are put at about Y. 34,000,000 in capital expenditure. As may be imagined, every item is accompanied with good reasons, and the company's directorate has a hard nut to crack in cutting down the figures as some pruning must needs be made. Mr. Tsukuda, Director of the company, has been overhauling the figures with the assistance of the superintendents of the statistic and auditing and accounting Sections. Among the chief items are included the appropriations for extending the water-gas producer factory at Fushun, the initial outlays for establishing the Anshanchan Steel Works, the continuation of the Sand-Flushing process at the Fushun Collieries, etc. The allotment for the Dairen Harbour Works programme, consisting of the construction of the Third Wharf and the completion of the North-West Break Water, etc., is one which hardly admits of absolute suspension.

Speaking of the water gas producer factory, its extension should have been finished during the current fiscal year, according to the agreement with the Electro-Chemical Industry Co. The establishment of the Steel Works brooks no further delay in view of Japan's crying need for iron and steel. With regard to the sand-flushing process, when the funds required therefor and the coal-yielding capacity are taken into consideration, this process might be taken for a means to raise the cost of production; but without this installation almost the whole of the Collieries at Fushun would be thrown out of exploitation in twenty years with a vast coal still lying untouched. Moreover, by the introduction of this process the danger of gaseous explosions may be successfully precluded, and on this potent ground the appropriation for its continuation is asked for. As the Company's staff is steadily expanding with families of officials etc., the enlargement of housing and school accommodation has become a matter of imperious necessity. The Railway Company is said to be in a position to disburse not more than Y. 30,000,000, and it is conjectured that the figures will be fixed at about Y. 25,000,000 in capital expenditure.

S. Manchuria Locomotives for Indo-China.—Part of the order for railway locomotives, placed by the French Indo-Chinese Railways with the South Manchuria Railway

workshops, Shahokou, was finished recently. Those completed were subjected to a trial run and the first consignment of the same was shipped to Saigon by the *Takaosan Maru*. This is the first order received from abroad and executed by the Workshop.

Japan's Railway Revenue Increase.—The revenue of the Imperial Japanese Government Railways from April to November 21 was 41,529,387 yen in passenger fares and 42,647,540 yen in freight charges. Compared with the same period of 1914, there was an increase of 3,676,134 yen in passenger fares and 8,769,781 yen in freight charges, and against the same period of 1915, an increase of 4,446,136 yen in passenger fares and 8,396,573 yen in freight charges, this year.

South Manchuria Ry. Earnings.—The total returns of the South Manchuria Railway for December, 1916, were 3,568,493 yen, of which 3,327,609 yen came from the main line and 240,814 yen on the Antung-Mukden Line. Comparing the total with that of the corresponding period of the previous year there is an increase of 640,896 yen. A comparison of some of the records of 1915 and 1916 follows:

	Dec., 1915	Dec., 1916
No. of passengers	318,809 (tons)	372,923 (tons)
Freight carried	695,206 yen	668,111 yen
Passenger trade	439,302	503,0 8
Freight ,,	2,291,210	2,587,124
Warehouse	17,985	24,725
Miscellaneous	124,749	147,382
Total	2,873,246	3,327,609
Average trade per day	92,685	107,342
Average trade per mile	134	205

The total returns for all departments from April 1 were 18,840,212 yen, which, when compared to the 16,190,127 yen for the same period of the previous year, is an increase of 2,493,763 yen.

The effect of the three-line transportation has not yet been ascertained and the results are watched with interest. This is a compromise reached by Imperial Railway Board, the South Manchuria Railway and the Chosen Railway to standardize the transportation rates from Japan to Antung. Up to the time of the compromise goods were shipped from Japan through the port of Dalny because rates were cheaper, most of the way being on water, while the Chosen route, though shorter, was higher due to the longer land transportation. In order to equalize the trade, a compromise was influenced by the Government. It is expected that due to the large amount of transportation, a monopoly by a single line is not possible nor is the bulk small for the two lines. This is proved by the congestion of commodities on all lines, and it is expected that the Manchuria Railway will enjoy about the same returns this year as last.

Kyoto-Osaka Tramway Fire.—A loss of 300,000 yen was suffered by the Kyoto-Osaka Electric Railway Company when fire broke out at the company's car barns at Fukakusa on January 16. The building, fifteen passenger cars and four freight cars were destroyed; they were fully insured.

SHIPPING

Half Century of Steam on Pacific.—On January 1 fifty years ago the American steamer Colorado left San Francisco on the first trip ever made by a steamship across the Pacific Ocean. The Colorado was a Pacific Mail side-wheeler, and had a registered tonnage of about 2,000 tons. Fifty years after its departure the entire American fleet in the Oriental trade consists of the steamer China, owned by Chinese, and three medium-sized steamers operated by the recently revamped Pacific Mail Company.

Shipping Competition on Sungari.—The shipping department of the Chinese Eastern Railway was until sometime ago enjoying brisk trade with its twenty-two vessels and forty trawlers on the Sungari River, but since the advent of another large Russian shipping concern keen rivalry has begun, causing losses to both. The Chinese Eastern Railway people, realizing the inadvisability of competition against their own nationals, have opened negotiations with the company upon the loan of steamers, according to Japanese press reports. The Railway people are taking the step from patriotic motives; they are looking toward the progress of Russian merchant marine. The negotiations, it is said, are being carried on satisfactorily and a compromise will be in effect when the waterway opens for trade next spring.

China Mail Orders 2 New Ships.—Aiming at the acquisition of a fleet of five vessels, instead of the one ship now in operation, Look Tin Eli, president of the China Mail Steamship Company, has arranged with the Wallace Shipyard of Vancouver, B. C., to deliver two ocean liners within ten months, according to statements in the Japanese press. Negotiations are also being made for the purchase of another vessel, while the steamer Nile, recently acquired by the company, will be placed in service as soon as it is released by the British government.

The China Mail Company was formed about a year ago, when the old Pacific Mail liner China was bought. Since the China has been on the run, under the United States flag, for the China Mail, she has been crowded to the gunwales with Chinese passengers and cargo on every trip. The success of the venture was such that Chinese capital rolled into the treasury of the company, which now has $10,000,000 in gold to spend on other ships. The prices for the two new steamers will be $1,500,000 each.

O. S. K. South American Line.—With the departure of the Kasado Maru from Yokohama for Rio de Janeiro and Buenos Ayres on December 17, the new South American line of the Osaka Shosen Kaisha was begun. The Kasado Maru was originally scheduled to leave Yokohama a week earlier but sailing was postponed on account of the large shipments from Kobe. Among Japanese goods which are in large demand are porcelains, lacquer ware, silk and cotton goods, hosiery, toys, fertilizer, lumber and beans. As Japan is to send 5,000 emmigrants to Brazil annually for the next four years, a demand for Japanese provisions will be created. The Kasado Maru is of 12,000 tons gross. Another ship of the same size will be put on the line later. Ports of call will be Yokohama, Kobe, Hongkong, Singapore, Durban, Cape Town, Buenos Ayres and Rio de Janeiro.

T. K. K. Buys Kobe Hotel.—The Oriental Hotel in Kobe, once one of the finest hotels in the Far East, has been acquired by the Toyo Kisen Kaisha. The consideration is stated to be between 600,000 and 700,000 yen. The hotel is a four story structure of brick and stone, and has such modern features as an elevator and roof garden.

20 Japanese Steamers Sold.—Twenty steamers, with a total tonnage of 74,277 tons, were sold by Japanese ship-owners to foreigners in 1916, according to an official investigation. Of these steamers, seven, with an aggregate tonnage of 25,632, were sold to the Norwegians; two, with a total tonnage of of 7,747, to the English; and two others with a tonnage of 5,990 to the Spanish. One ship of 3,515 tons was sold to Filipino interests.

New Seattle-Orient Line.—Arrangements have been completed for a new line of steamships between Seattle and the Orient. With more than $5,000,000 worth of ships building both here and in Japan to be placed in service next spring by the new company, the Norwegian-American Line, the Seattle-Oriental fleet will be swelled to about forty great carriers, operated by six lines. Officers for the ships building in Japan have arrived here and are awaiting transportation to their new commands, four of which are being built in Nippon yards. One ship, the Thorfried, now in the Orient, will be commissioned for the new trade upon the arrival of officials of the Norwegian company at Yokohama. Two of the ships building in Japan are the Yindiggen and the Beseggen, named after twin peaks in Norway. They are of 5,100 tons each. These vessels are being constructed for the Jens Folkman interests. The Vagland, of 3,500 tons is on the way in Japan for the Wilhelmson Brothers of Bergen.

13 Millions in Half Year for N.Y.K.—Announcement has been made that owing to its general prosperity the Nippon Yusen Kaisha netted profits amounting to 13,000,000 yen during the last six months, a gain of 4,000,000 yen over the previous six months. The company's dividend for the half year was fixed at 28 percent as against previous dividends of 20 percent although many stock holders wanted 30 percent.

Baron Kondo, president, presided at the meeting, which was attended by nearly all of the stockholders as well as representatives of the government, which gives the N. Y. K. a subsidy. Reporting on the remarkable trade the shipping company has enjoyed, Baron Kondo expressed the belief that the prosperity would continue for another six months.

Operating ninety-nine steamers of its own and ten under charter, all of them having an aggregate tonnage of 470,000 the N. Y. K. transported a cargo of approximately 2,470,000 tons and carried more than 137,000 passengers in the six months' period ending September 30. Net profits were 17,243,809.426 yen, but the total was brought to 24,273,347.281 yen by 7,029 537.855 yen forwarded from the previous half-year period. Other items in the report follow: Reserve fund, 862,190.471 yen; bonus to officials, 200,000 yen; amount to be divided on shares, 3,850,000 yen; special allowances to employees, 400,000 yen; to be forwarded to the next period, 18,961,156.810 yen.

O. S. K. Plans Increase of Capital.—The capital of the Osaka Shosen Kaisha will be raised from 24,750,000 yen to 50,000,000 yen, if the plans approved by the directors of the big shipping company, who met in Osaka are passed by the shareholders, at the semi-annual general meeting. The directors also agreed that a regular dividend of 10 per cent be declared for the half-year, and in addition a special dividend of 20 per cent, making a total for the semi-annual period of 30 per cent. The increase in the O. S. K's capital will make it the largest shipping concern in Japan as regards the size of its capital. According to the plan adopted by the directors, the company's shares will be increased to one million, which means that 505,000 new shares will be issued. Of this total 247,500 shares will be taken up by present shareholders, while the rest will be offered to the public.

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FENG KUO CHANG
VICE-PRESIDENT OF THE REPUBLIC OF CHINA

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NOTE :-

SCALE 1 : 6,000,000

English Miles

0 10 20 30 40 50 100 150 200

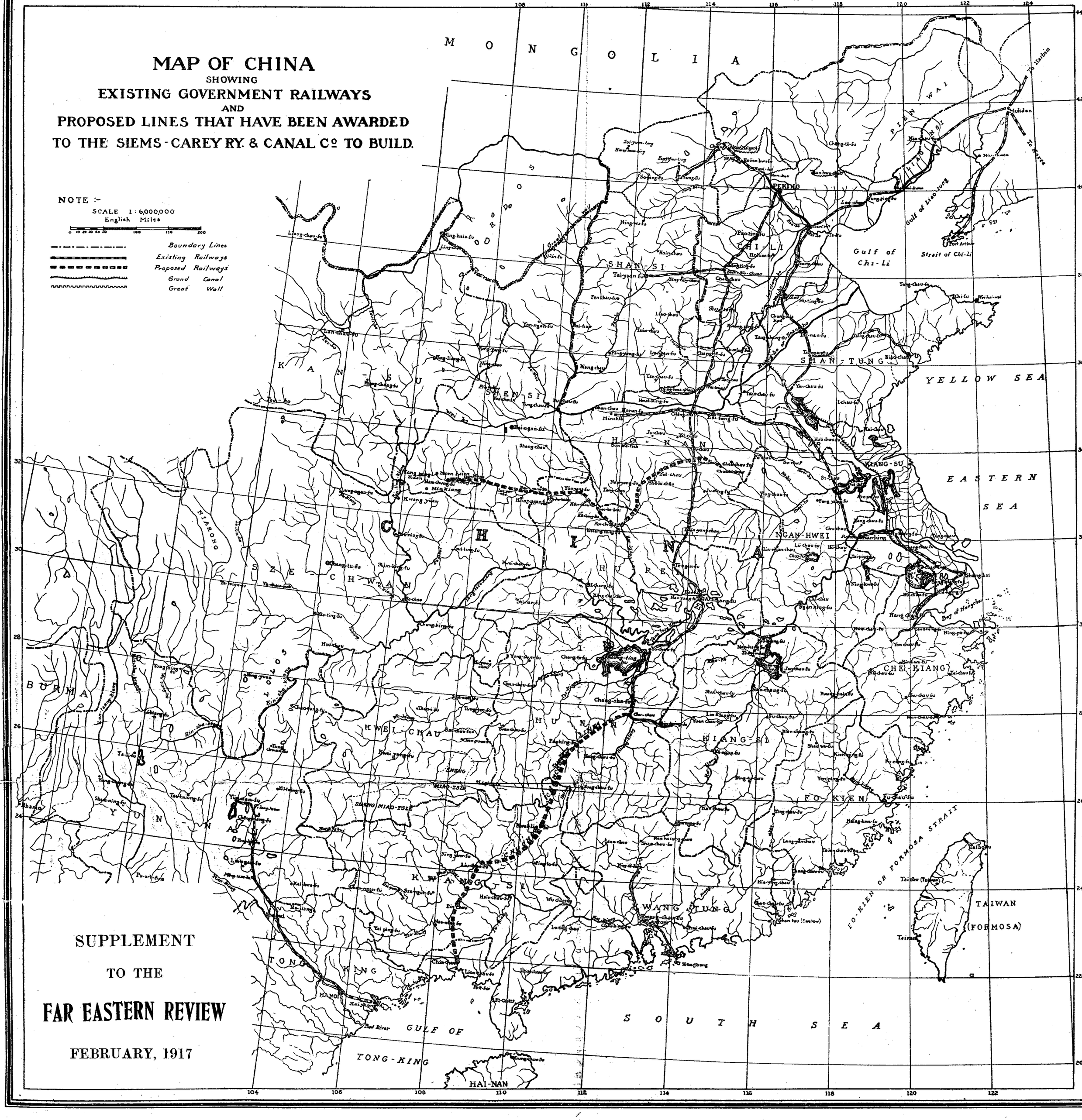
Boundary Lines

Existing Railways

Proposed Railways

Grand Canal

Great Wall



SUPPLEMENT

TO THE

FAR EASTERN REVIEW

FEBRUARY, 1917

THE FAR EASTERN REVIEW

COMMERCE :-: ENGINEERING :-: FINANCE

VOL. XIII. SHANGHAI, FEBRUARY, 1917 No. 9

PART OF FOREIGN AND CHINESE ENGINEERING STAFF OF THE SIEMS-CAREY RAILWAY AND CANAL CO. MR. TAOYU E. SUN, THE MANAGING DIRECTOR OF THE RAILWAY, IN CENTER STANDING BETWEEN MR. L. J. BUCKNER, AUDITOR (ON RIGHT) AND MR. GEORGE KYLE, CHIEF ENGINEER

ANOTHER AMERICAN RAILWAY PROJECT

From Honan Province into Hupeh and Shensi Provinces

It is gratifying to note that the Siems-Carey Railway and Canal Company, which recently secured a contract designed to provide Kwangsi Province with its first railway communication, means serious business in China. Hardly had arrangements been made to despatch survey parties into Kwangsi than the Chinese Government arranged with the Company for the construction of another line into regions entirely lacking adequate means of transportation for their products. The proposed line will traverse a rich part of Honan Province, part of the north of Hupeh Province, and will then run into the south of Shensi—another province so far innocent of railway communication—by way of the upper Han River valley.

For the time being the eastern terminal of the proposed line is at Chowkiakow, on the Tasha river, in Honan, whence the line will strike direct to Yencheng, on the railway now connecting Peking with Hankow. Thence it will run south-westwards, via Nanyangfu, to Siangyangfu, on the Han River, in Hupeh Province. From there it will follow the Han River valley into Shensi Province, the terminal being the city of Hanchungfu. At a later date it is possible that some modification may be made in this route in favor of a continuation of the railway now under construction between Pukow, on the Yangtse River, and Sinyang, on the existing railway between Hankow and Peking, to Siangyangfu. If this logical development of the Pukow-Sinyang railway is carried out it will give this line the importance of a trunk system extending north of the Yangtsze from Pukow into Shensi Province, and maybe later into remote Szechuan, a consummation devoutly to be wished by every one of the 70,000,000 in this rich province and also by those interested in the railway. The reason why the extension from Sinyang westwards was not immediately proposed to the American company is that the British and Chinese Corporation, who hold the contract for the construction of the Pukow-Sinyang railway, have thought about carrying out the work, but owing to the war they will undoubtedly be glad for the American Company to take it in charge. Since it would seem to be in the best interests of all parties, the Chinese, British and Americans, that this line be constructed before a northerly one from Yencheng to Siangyang is undertaken, it is likely that the British, in view of the changed conditions owing to the war, and the more important financial stringency, will gladly acquiesce in the

proposal to allow the Americans to effect the connexion. Work on the Pukow-Sinyang line was, it may be explained, under way when the war broke out, but owing to lack of funds a halt had to be called. When the war is over, and if financial arrangements can be made, construction will be resumed, but it is problematical if ever the money will be forthcoming from British sources for a continuation of the line westwards beyond Sinyang. The British have to provide a considerable amount of capital for contracts already in hand and it is certain that their resources will be stretched to the utmost to make this provision without undertaking new projects. It is logical, therefore, to suppose that they will welcome American money to build an extension which will tremendously enhance the future value of their line, and if this is done we can expect a modification of the new contract to cut out the line from Yencheng south to Siangyang, at least for many years, and substitute in its place the direct one from Sinyang westwards.

In the meantime survey parties will set out to cover the route from Yencheng eastwards to Chowkiakow, and south-westwards from Yencheng to Nanyangfu. From the latter city a reconnaissance party will report on the route to Siangyangfu. The valley of the Han River into Shensi will be examined later. From Chowkiakow to Nanyangfu the country raises large crops of cereals, particularly beans and sesamum seed, and there are excellent prospects for the commercial success of any railway built through the region. The traffic passing at present between Chowkiakow and the railway at Yencheng warrants in itself a line of railroad, and when that is built the demand is likely quickly to arise for a further extension eastwards to the prefectural city of Chenchow and on to Pochow. The whole of this area is rich in agriculture. The same may be said of the bulk of the country west of the Peking-Hankow line towards Nanyangfu, and even if the more ambitious proposal is proceeded with it would appear advisable to provide Nanyangfu and the territory northwards with proper transportation facilities. Should the line be carried on, as now proposed, to Sianyangfu and beyond, it will make that city something of a railway centre in future years, for the German line from Hankow is destined to touch there, and likewise a connexion is sure to be built sometime or other with Sinyang.

At the moment Siangyang is near the head of navigation on the Han River, and can be reached by small launches. Quite a large junk traffic is maintained, and in summer freshets small junks even traverse the Han River as far as Hanchungfu, the terminus of the proposed line, some 600 miles from Hankow. Produce brought by rail from the Nanyang region could therefore be transhipped at Siangyang and be sent down stream by boat, if a long rail haul is objectionable and if the Hankow market or wharfage is desired. The average minimum speed of the river from Siangyang is about three miles per hour, thus the 300 miles to Hankow is negotiable in reasonable time even by junks. It is interesting to recall at this stage that Siangyang was once the objective of a railway which the Peking Syndicate contemplated building from their mines north of the Yellow River, their aim being to secure a point of navigation for the transhipment of their coal. An examination of the river showed, however, that while the stream might be available for ordinary merchandise carried in small launches or junks it was too small to permit of the regular use of spacious barges capable of carrying large quantities of coal, and consequently the project was abandoned.

The Han River is, of course, the only artery into southern Shensi, and despite its rapids above Siangyang boatmen ply on it as long as water permits, and, by taking advantage of freshets and floods, they manage to push right up to Hanchungfu, the journey from Hankow, some 1,120 miles, taking sixty days, and down fifteen days. By road from Hankow the distance is but 620 miles, but when the mountains are entered the "road" is but a track over which nothing but pack animals can convey goods.

In commenting upon the Han River valley route for merchandise into Shensi and Szechuan, Baron Richthofen, the famous geologist, gives the following distances, as obtained from native boat captains who ply on the river:

From Sinpuwan (westwards of Hanchungfu) to Tzeyang	1200 li.
From Tzeyang to Laohokow	1200 li.
From Laohokow to Fancheng	150 li.
From Fancheng to Hankow	1240 li.
Total navigable length of river	3790 li.

A li is generally regarded throughout China as one-third of a mile. "The total distance," Richthofen hazards, "is probably more than that from Shanghai to Ichang, on the Yangtsze. In the first 1,200 li, rapids are frequent and dangerous, the boats are therefore very small. At Tzeyang the goods are transhipped to somewhat larger boats, and a second transhipment to the ordinary boats of the Han River is made at Laohokow. Travellers going east take the water route: going west, they go usually by land. The road-distance from Laohokow to Tzeyang is considered as 720 li, and from there to Sinpuwan the same."

The Paradise of Hanchungfu

The most interesting portion of the proposed railway, from an engineering point of view, is naturally the Han valley. The river traverses a region of mountains, interspersed with large cultivable valleys, from the valley of Hungchungfu, 2,000 feet above sea level, which, as Baron Richthofen points out in his writings, is considered by the people of northern Shensi as an earthly paradise. "The plentiful growth of evergreen shrubs and trees, wild bamboo, orange trees, palm trees, and mulberry trees, is," he says, "sufficient indication of its warm climate. The Tsinglingshan, the great range of mountains to the north, which rises abruptly to summits of 6,000 feet, keeps off the northerly winds, while the Tapashan of the south side, commences with gentle and partly wooded hills, between which long rivers descend, with here and there some cultivated valley ground on their banks. Although the Taipings have killed more than one-half of the inhabitants, the valley of Hanchungfu is still very populous and contains many towns and villages crowded with people. I could not ascertain its extent. At Hanchung the width of the valley appears to be about twenty miles from north to south. But immediately west of the city it contracts to no more than seven miles. It continues nearly thirty miles in that direction, and closes abruptly at the destroyed city of Mienhsien. There the two enclosing ranges meet, to form to the west a broad mountainous region which is difficult to penetrate.

"The valley produces wheat, cotton, tobacco, silk, and many other crops. Besides them the manufacture of carpenter's glue in the district of Sisiang, eastwards of Hanchungfu, deserves some notice. There are places in China that monopolize the manufacture of certain articles, which, although not considered of much importance in trade, attain some magnitude when one small region supplies with them the population of many provinces. Of that nature is the manufacture of glue in Sisiang, probably one half of China is supplied from there with that necessary article. On the road from Taiyuanfu to Hanchungfu it never ceased to be conspicuous among the articles of carrying-trade. The fact that the place, by furnishing a superior article, defies competition, is said to be due to the occurrence of a plant, the bulbs of which are, besides the commonly applied substances, used in boiling the pig skins which are to be converted into glue. Another industry of the country is the manufacture of steel. It is made in several places. The most celebrated among them is Tieluchwang, on the Kiu-sui river, which empties into the Han below Sinpuwan, westwards of Hanchungfu. The place is situated 300 li (about 100 miles) up the river in the Tszpaishan mountains. Several hundred soldiers are stationed there on account of the turbulent character of the numerous population at the steel works."

Hanchung, it is interesting to recall, was in the old days a dependency of the northern emperors, and was referred to in Marco Polo's travels as Cuncun: "A province abounding in mountains which is called Cuncun, and is a very wearisome road to travel."

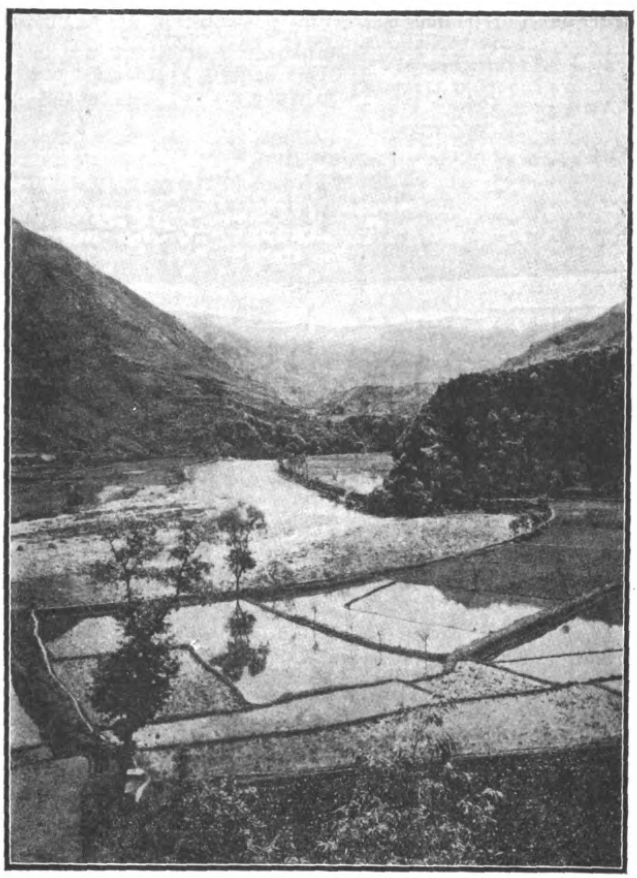
Lieutenant-Colonel C. C. Manifold, who travelled extensively in China, and who read a paper on the subject before the Royal

Geographical Society, on November 23, 1903, touched on the section of the road near Hanchung, which he reached on his way from Sianfu to Chengtu. On emerging from the Tsinling mountains, he says, "we now dropped into the Han River at Yanghsien and at once began to realise we were in direct touch with the richer towns of the Yangtsze basin, and thus more in contact with western civilization than any we had so far seen. The change in climate too was marked. The air had lost all its fiery, crisp cold: it was damp and chilly—in the morning dense fogs. We proceeded up the valley of the Han, which is here wide and full of cultivation as far as Hanchungfu and used to be a great grain exporting country, now only just sufficient grain to feed the population is grown and its place as an export has been entirely taken up by opium."

This was written, of course, before the extirpation of opium growing was effected by the Chinese Government. Opium was discovered by the farmers to be a more valuable, easier transported crop, and in consequence the western provinces eagerly abandoned grain growing in its favor. The action of the Government in suppressing opium has, however, caused a reversion to the old crops, and large areas which were abandoned have once again been cultivated and wheat is now supplanting poppy almost generally.

A Journey Down the Han

In the course of a journey from Chengtu, the capital of Szechuan Province, to Hankow, about 1869, Alexander Wylie traversed the route up the Kialin river into Shensi and then down the Han River. Entering the Hanchung valley from the west, he says "the wall of the city of Mienhsien was in very good condition but the whole enclosure seemed to be one great field of maize. . . . . The whole population, including the official establishments, is collected in a large suburb on the east side, enclosed by an earth wall, which is now a ruin. . . . From the city of Meen (Mienhsien) eastwards, the hills recede from the river, leaving a level valley of several miles width, which extends some miles beyond Hanchung. Hwangsha (a little west of Hanchung) is a considerable town on the left bank two or three miles below the city, standing back about a li from the river. Rain prevented any extensive perambulations through the city of Hanchung, which seemed to be of moderate size. A tolerable extensive suburb separates it nearly a mile from the river on the south, and there is a much larger one outside the east gate, enclosed by a mud wall, now almost demolished."



IRRIGATED VALLEY IN HAN RIVER REGION

As the boatmen were not prepared to leave Hanchung for several days Mr. Wylie decided to go some distance by chair, and travelled all day over a flat country, chiefly occupied by fields of rice and maize. "At a distance of about eight miles from the city we crossed the Han in a ferry boat, the river there being about 300 yards in breadth, with shallow slope on the left bank and a deep channel and swift current on the right. . . Next day we made 30 miles, mostly over hills, passing several villages and hamlets on the way. . . . Paper is manufactured among the hills not far distant, which gives rise to a good deal of traffic. . . Taking a boat at Matsungtan, we floated down rather rapidly with the current for 17 miles to the district city. This seems to be a busy, thriving place, and there is a considerable suburb on the south side. . . . During the day we passed a number of the large water wheels used for irrigating the fields by raising water from the stream to heights of 20 or 30 feet.

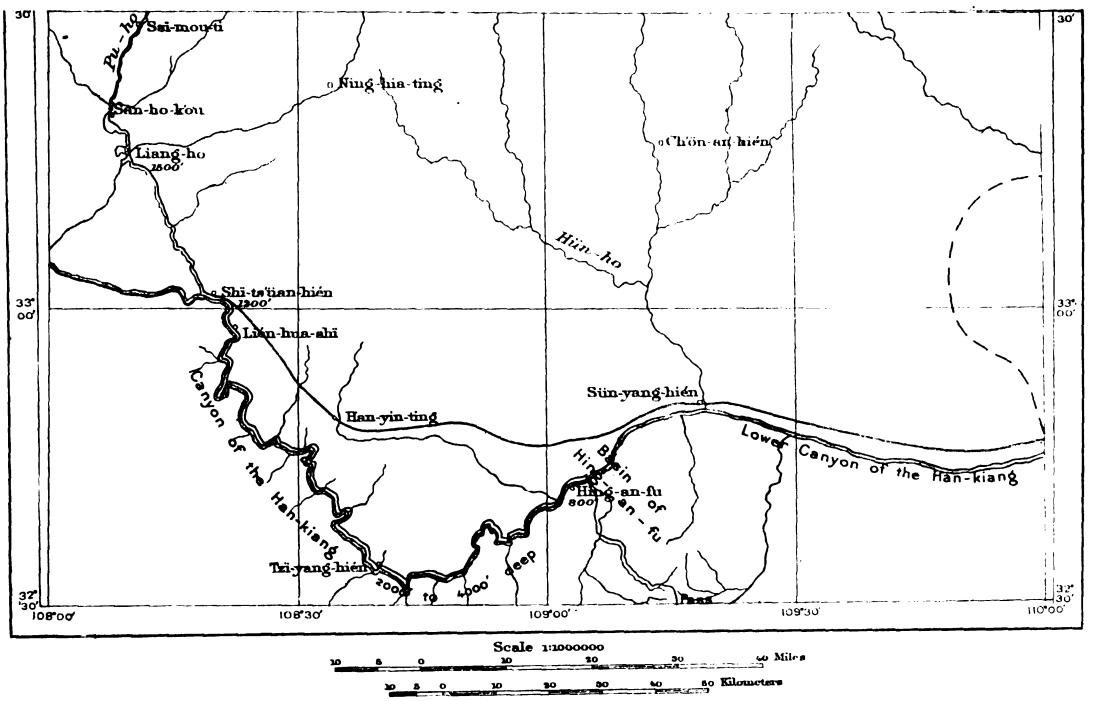
"After leaving Cha-chin much of the path (over hill-tops) was bordered by date, walnut, Tung-oil, and a variety of other trees. The cottagers by the wayside were engaged in silk manufacture. The current carried us rapidly down the stream, making the passage of 20 miles in three hours or less. The course nearly all the way was between abrupt hills, with occasional precipices, and in some places the river is confined within a very narrow channel. There are two rapids in the interval caused by reefs. About mid-day we came in sight of the district city of Shihchuan. The city is built on a red sandstone rock; and there is a spring of deliciously clear and refreshing water just under the southern wall, from which the city derives its name, 'Stone Spring.' The place within the walls is small, and has but one busy retail street from the east to the west gate.

"In the neighborhood of the village of Meihoo (further down river) a good deal of silk is produced. At the town of Hanwangching tea and silk are produced and form articles of commerce. A little way beyond this place a number of coal-pits were passed on the left bank. Some five miles lower there is a good deal of firewood, which the natives make up into faggots and pile up along the banks for sale. Thirty-four miles below this place the river Jen-ho enters the Han. Ten miles up the Jen-ho is a quarry, famous for the production of ink-pallets. Nearly opposite but a little lower stands the city of Tze-yang, a small place built on the summit of a low hill, with a scattered suburb spreading down nearly to the water's edge. Slates are produced in abundance in this neighborhood and most of the houses are roofed with them; not cut to any regular shape, but heaped on just as chance seems to have decided the form. There we took a pilot on board, to guide us through the rapid a mile below the city. The waves were like a little sea, and far exceeded anything of the kind we had previously come to on the Han. Just below the village of Tataouho coal was being wrought in the face of the cliff. Five or six miles beyond there were numerous coal pits on the right bank, and ten miles further down coal was being again worked in the cliff.

"The Han retains much the same character, a tortuous channel of six or eight hundred yards wide between high hills, for about 30 miles further, when the prospect begins to open out, and a succession of low hills gradually decline to a plain of some tens of miles' extent. A few miles further east the prefectural city of Hingan was reached. The business was mainly confined to a large suburb skirting the river. A good

deal of silk manufacture is apparently carried on and there is a considerable assemblage of boats. From that point there is a highway to Sianfu, the capital of Shensi Province. Several large rapids are passed before the border of Hupeh Province is reached. The country then gets more open, the hills much lower and more cultivated.

"The hills, which are of sandstone and conglomerate, continue to decrease in height until the prefectural city of Yuenyang is reached. A hill on the right bank, directly facing the city, is called the Teenmashan, or Hill of Pegasus, the tradition concerning which is, that in ancient times the cliff exhibited three characters meaning 'the King of the Celestial Horse.' Adjoining this, on a smaller hill, is a tall, slender pagoda without galleries, named the Polar Star Pagoda. There is a popular tradition concerning that also, that it was built by a former prefect, who suspected the fidelity of some of his wives, and that when the structure was raised in view of the official residence, such was the effect of the fengshui, or 'geomantic' influence, that the grievance ceased. It was built in 1755." From this point Hankow was reached in nine days, and Mr. Wylie gives no further information about the river.



MAP OF GORGES OF THE UPPER HAN RIVER SHOWING PROBABLE ROUTE OF RAILWAY FROM SUNYANGHSIEN TO SHIHCHUANHSIEN TO AVOID CANYON 2,000 TO 4,000 FEET DEEP

A Canyon of the Han

Mr. Bailey Willis and party, while making researches for the Carnegie Institute, also traversed a short section of the Han valley—from Shihchuan to Hinganfu. With regard to this Mr. Willis reports: "The river runs through high mountains, for which we learned no general native name. We shall speak of them as the Mountains of the Han, including under that term the heights on both sides of the river, from the basin of Hanchungfu eastward. In traversing them the Han cuts a deep canyon, which widens at Hinganfu to a valley 8 or 10 miles across on the course of the river from east to west, and probably 30 or 40 miles long from north to south. This basin is floored with recent gravels, and appears to have other features than those which would follow from a simple widening of the river valley. East of Yanghsien the Han soon enters a mountainous region through which it winds in crooked course with many rapids.

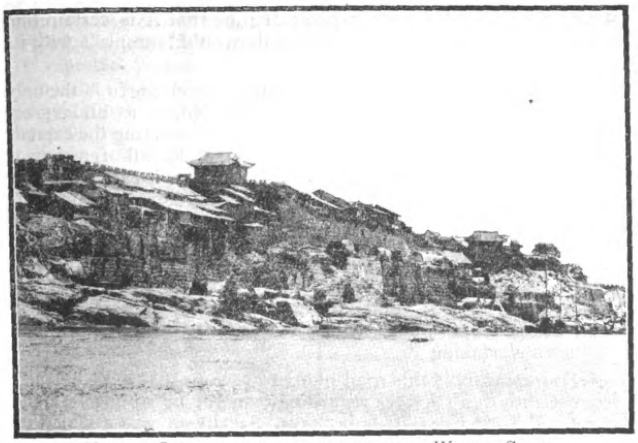
"From Shihchuan shien to Hinganfu, a distance of 105 miles, the canyon of the Han exceeds in beauty many world-famed gorges. There are stretches of the lower Danube which might compare with it, but fall far short in grandeur; in the Highlands of the Hudson there are features of massive gray crags and foliage which one sees repeated on the Han, but the vista of great mountains is lacking. The Han, a stream of great volume rarely more than 200 meters wide, flows in long quiet reaches or dashes in rapids over gravel bars and rock ledges. It is usually confined by cliffs near the water's edge, and these sometimes rise boldly to heights of a thousand feet or more, but more generally the higher slopes of the canyon are wooded or cultivated. The view is often limited to the immediate hills, but when the boat sweeps round a turn and opens a distant reach, there rise before one the forms of splendid mountains, from 4,000 to 6,000 feet above the stream and impressively near.

"Near Shihchuan hsien there is a wide valley belonging to a small stream, which comes from the northwest. The Han enters from a canyon, and after flowing for 3 miles in the wider valley, leaves it to strike across ledges of limestone and granite. At Lienhuashi (Lily Flower Rock) white surfaces of granite rise directly from dark eddies, and the canyon narrows; thence it widens and narrows alternately as the river flows through schists or limestone.

"At one point only was it practicable for us to leave our boats long enough to climb to the hilltops adjacent to the river. Near Siautauho I ascended about 900 feet to a spur on the right bank. From that point the view up the Han showed an old valley level, 1,200 feet above the river, extending widely to the mountain slopes which in that vicinity rise 1,000 to 2,000 feet, 300 to 600 meters, above it. Below Siautauho the river enters a zone of soft phyllites. The hills decline and recede from the river, and the basin Hinganfu opens to the north and south. The river flows across it and leaves it on the western side to enter among the high mountains, which wall in its lower canyon. The basin is apparently a widening of the river valley, which might readily be attributed to the softness of the sericitic schists in which it is excavated."

Down the Han River on a Junk

"If the wind spirits of the Han are not especially unpropitious the voyager will," writes Mr. Francis H. Nichols,* "on about the tenth day after leaving Lungchuchai,† drift with the current around a promontory out upon an abrupt widening of the river that at first sight seems almost like a small lake. On



VIEW OF SHIHCHUANHSIEN, ONE OF MANY WALLED CITIES SEEN ALONG THE HAN RIVER

one side the bank rises in a high bluff that is surmounted by a stone wall and gateway, the unmistakable signs of a city. A stone pier juts out into the river, and from it a stairway winds up to the gateway. This is Laohokow, one of the river-towns of Hupeh. It is from this point that the Han becomes essentially commercial. In the river-bed are twenty or thirty junks of every variety known to China. Some are for passengers and some are for freight. Some are moored to the wharf and some are anchored in midstream. On the junks and about the wharves are crowds of men transferring merchandise from one boat to another and carrying it in long processions that wind in single file up the stairway. The life and activity of the scene are accentuated by contrast with the silent gorges from which the canoe has just emerged. The barrier mountains tower dim behind. The traveller is on a mighty commercial river of commercial China.

Silk Manufacture

"As in most of the towns in Western Hupeh, the weaving of silk is the chief industry of Laohokow. In the fields about the town are thousands of mulberry trees, from which the cocoons are gathered, and are brought in baskets to the factories in the town.

"Although the silk industry of China dates from the time of Hwang Ti, 2800 B.C., and the processes employed have never differed materially from what they are to-day, the system of manufacture is remarkably like that found in large silk-mills on our side of the world. The looms are quite as intricate as those used in America, the only essential difference being that the motive power in Hupeh is a foot-treadle instead of steam. Two men are employed at every loom, the weaver sits in front at the treadle and works the shuttle while another man sets the pattern above on a network of catgut strings. As silk weaving is a form of skilled labour requiring three or four years to master, a weaver receives the extraordinarily high wages of fifty cents a day, which is more than twice as much as can be earned by a labourer in any other trade in Hupeh. The kind of silk that I saw produced on the looms of Laohokao is very different from the flimsy material sold in New York as China silk.

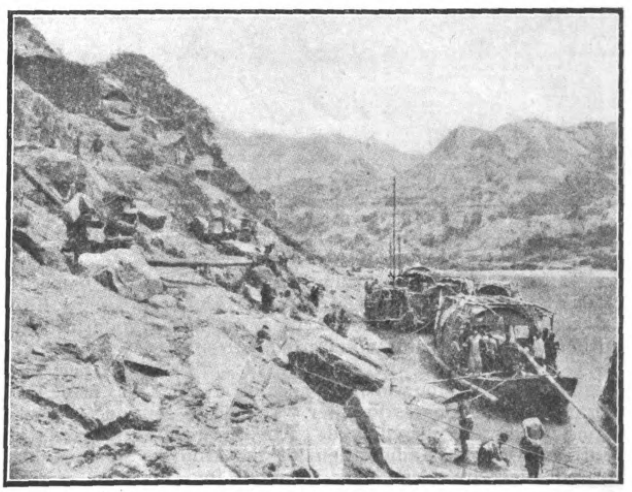
"Compared with the canoes, the large junk on which we embarked at Laohokow was a modern and convenient craft. It was divided into five cabins and had a tiny little dining-room that rejoiced in the luxury of a table and three wooden stools. In an extension built over the huge, ungainly stern was a kind of house where lived the captain and his wife. There is scarcely a mile of the river that does not contain at least two sharp angles around which the junk must alter its direction. Far more useful than the sail is the mast. For the greater part of the way the peak is about on a level with the top of the clay bluff that forms the bank. From the mast-peak a tow-rope is carried ashore. The captain and crew tie it around their waists and then walk along the top of the cliff or bluff slowly pulling the junk after them.

"At the border line between Honan and Hupeh the gorges disappear. From that point to its junction with the Yangtse at Hankow the Han flows between high clay banks. The current is brown and murky, very different from the clear, shimmering stream fed by springs in the Shensi mountains. The towns which one finds on the river-bluffs are all very much alike. They have stone gateways, from which a flight of stone steps descends to a pier extending into the river. Occasionally on a beach in a cleft in the wall-like bluff is a little mud village whose inhabitants make strenuous efforts to sell eggs and vegetables to passing junks.

The Junks of the Han

"It would be interesting to know the amount of the annual tonnage of the Han River. If it could be presented in figures the West might form some adequate idea of the internal commerce of China. The Han is one of seven or eight rivers, which, on every day in the year, are crowded with thousands of junks loaded to the gunwales with every form of merchandise known to the Black Haired People.

"The junks are of light draught and, according to Western ideas of shipbuilding, are ungainly and top-heavy. Yet one of these flimsy boats is able to carry an amount of freight that would tax the capacity of a large American coasting schooner. There seems to be almost no limit to the amount of cargo which a fleet of junks can transport from one point on the river to another. Chinese ingenuity is in nothing more manifest than in the methods of stowing freight. The cabins



HOUSEBOATS ON THE HAN

and upper works are not nailed, but are merely fastened together by skilful dovetailing. When the cargo is greater than the hull will hold, the cabins are removed and the surplus of freight is piled high above the gunwales. Cargoes of long timbers are tied across two or three junks abreast, forming of them a gigantic catamaran, on which the crew sleep and eat and cook their meals as comfortably as on the floor of a house. We passed some twenty or thirty junks heavily laden with bales of American and British cotton cloth. Room was always provided for an extra bale by unrolling it and from it improvising a

* "Through Hidden Shensi," by Francis P. Nichols.
† On the Tankiang, a tributary of the Han.

temporary topsail. The cloth sail was never cut, but on reaching its destination it was rolled up again and delivered to the consignee in the original bale that the boatman had received from the shipper.

"From Laohokow to Hankow the Han is patrolled by a succession of war junks, whose business it is to prevent smuggling and to suppress the river-pirates who now and then steal out at night and rob fleets of freight-boats anchored near the shore. Accustomed as I was by this time to the appearance of slovenliness and neglect that characterised everything belonging to the government, the neatness and trim beauty of the war junks was a pleasant surprise.

"Every morning and evening the deck is washed and scrubbed, and the crew spend most of their leisure hours in painting their craft with a kind of shellac that prevents its exterior from ever looking dirty or stained. The most beautiful sight on the Han River is a war junk cutting through the muddy water with twenty soldiers at the oars, their backs rising and falling in unison.

Two Han River Cities

"On the opposite banks of a bend in the river, fifty miles south of Laohokow, are the Shen cities of Fanching and Siangyang. They are now only sleepy old rivertowns with crumbling walls and dilapidated wharves, but there was a time, several hundred years ago, when they successfully defied the besieging armies of Kublai Khan. All the country to the northward had been conquered by the Mongols, but for two years the Chinese garrisons of Fanching and Siangyang held the way to the capital in Kaifong. Again and again Kublai's soldiers attempted to scale the walls and were as often driven back. In despair at ever taking the two stubborn cities, Kublai sent to his nephew in Persia for cannon of an improved pattern.

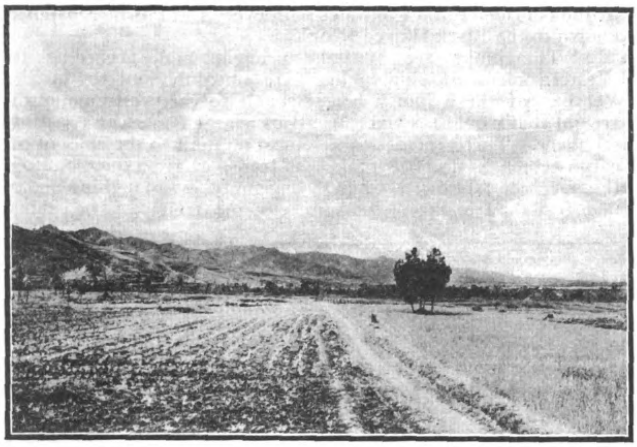
"By means of the huge missiles that these new war engines hurled at the walls of Fanching a breach was made that permitted the Mongols to enter. Unable to continue the fight alone, Siangyang surrendered. The heroism of the garrisons had so won the admiration of the Mongols that Kublai spared their lives and took them all into his own service. Fanching to-day has a large market and contains a few silk factories, but Siangyang lives largely upon its memories. Because of its traditions it is a favourite place of residence for aged mandarins, who have retired from active life with snug fortunes accumulated by years of 'squeezing.' The space within its walls is divided into gardens surrounding the villas of its residents. Throughout China, Siangyang is renowned for the glory of its past and the exclusiveness of its present."

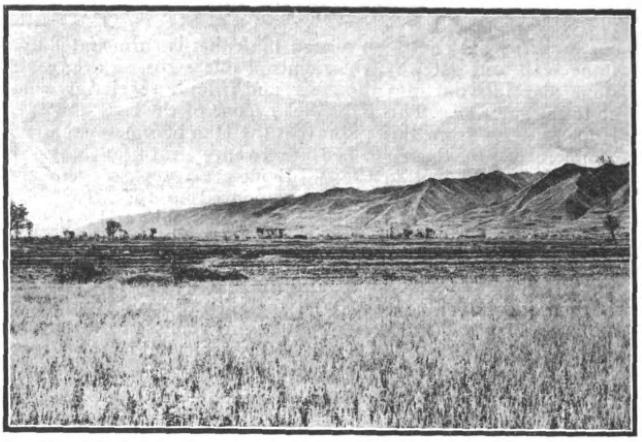
A Celebrated Road into Szechwan

One of the most important developments which is likely to attend the opening of the Hanchungfu valley by railway is the building up of considerable trade with Szechwan Province, which, with the exception of the Yangtsze River has practically no other inlet or outlet. Until recent years Szechwan Province has been considered isolated in flood times, the gorges of the Yangtsze being then impossible of negotiation. In such time traffic has invariably come up the Han River valley and over the Tapashan range into Szechwan, a comparatively short journey once the Hanchung valley has been reached. A railway to Hanchungfu would, therefore, make the great Red Basin of Szechwan so much nearer in point of time that it is certain that a great change in the trend of trade would take place with its inception.

As it is, the road passing through Hanchungfu is the only one giving travellers ingress from the North to and egress from Szechwan. It is a section of the road connecting the capitals of Szechwan and Shensi, a road which, as Richthofen says, is among the most celebrated in China because it establishes the only one existing practicable means of intercommunication by land between the northern provinces, and especially Peking, and those of the south-west and Tibet. Altogether it is some 637 miles from Sianfu to Chengtu, and with the exception of that portion which lies in the Wei Basin, and the short passage through the valley of Hanchungfu, the entire road leads through exceedingly mountainous countries, and its construction was a difficult undertaking.

So important is this road likely to become that some extracts from Richthofen's letters regarding it might be of interest and value. Before it existed, he says, Szechwan was a sealed-up country, inhabited by "barbarians." Hanchungfu could be reached from Sianfu (the capital of Shensi) by mountain trails, which followed probably the same lines as those now existing. To get possession of Szechwan it was necessary to build a road from Hanchungfu to the heart of the Province, which is Chengtu, the capital. The manner in which this task was accomplished, in the third century before our era, is preserved among the people in a legendary way. It is related that the Emperor Tsin-chi-hwang, desirous of subjugating the great territories of the present Szechwan, succeeded in bringing his army across the Tsinlingshan range to the valley of Hanchungfu. From there his troops could easily move to the pass which now carries the name Wutingkwan, but when there they reached a pathless wilderness. He offered relations of amity to the King of the Mantze, who resided at Chengtu, and in token of friendship, well knowing the avaricious character of the prince, offered him two cows which had the remarkable faculty of converting common food in their stomachs into pure gold, having previously taken care that the fame of the wonderful animals should spread and reach the ears of the King. Five delegates were sent to receive the costly present but on their arrival at the Emperor's Court were given to understand that the animals, requiring the greatest care, could only walk on





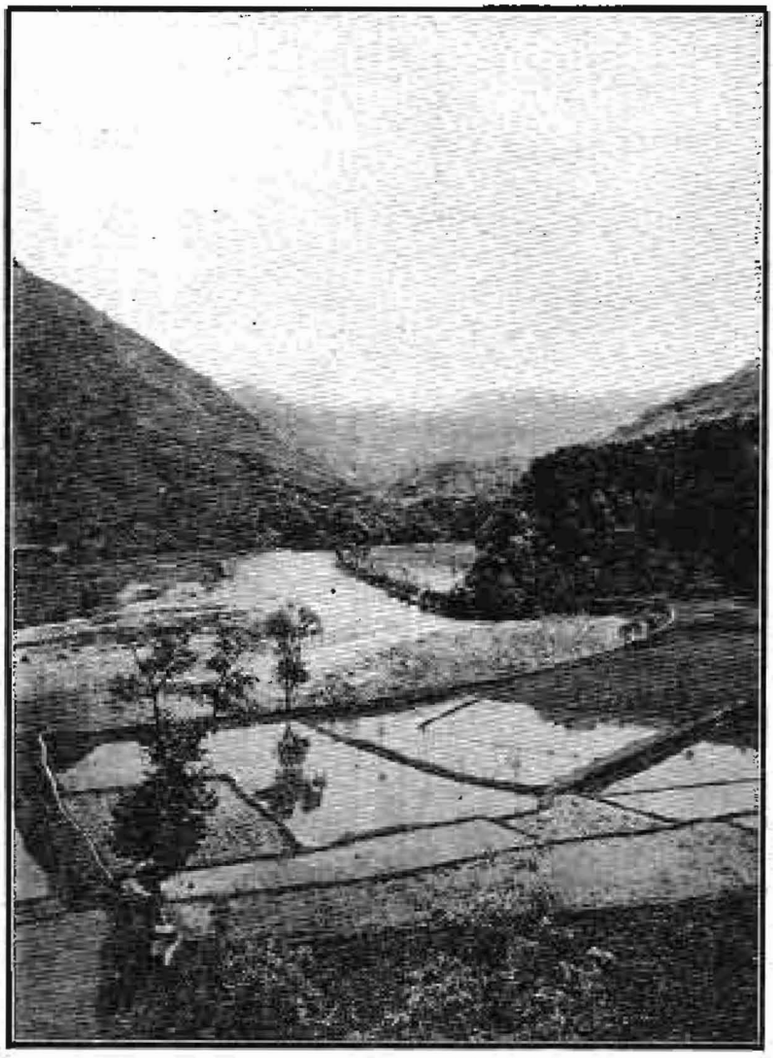
Fertile Valleys of Shensi that lie Hidden Behind Mountain Ranges and Which now Depend on River Gorges for Outlet for their Products

Geographical Society, on November 23, 1903, touched on the section of the road near Hanchung, which he reached on his way from Sianfu to Chengtu. On emerging from the Tsinling mountains, he says, "we now dropped into the Han River at Yanghsien and at once began to realise we were in direct touch with the richer towns of the Yangtsze basin, and thus more in contact with western civilization than any we had so far seen. The change in climate too was marked. The air had lost all its fiery, crisp cold: it was damp and chilly—in the morning dense fogs. We proceeded up the valley of the Han, which is here wide and full of cultivation as far as Hanchungfu and used to be a great grain exporting country, now only just sufficient grain to feed the population is grown and its place as an export has been entirely taken up by opium."

This was written, of course, before the extirpation of opium growing was effected by the Chinese Government. Opium was discovered by the farmers to be a more valuable, easier transported crop, and in consequence the western provinces eagerly abandoned grain growing in its favor. The action of the Government in suppressing opium has, however, caused a reversion to the old crops, and large areas which were abandoned have once again been cultivated and wheat is now supplanting poppy almost generally.

A Journey Down the Han

In the course of a journey from Chengtu, the capital of Szechuan Province, to Hankow, about 1869, Alexander Wylie traversed the route up the Kialin river into Shensi and then down the Han River. Entering the Hanchung valley from the west, he says "the wall of the city of Mienhsien was in very good condition but the whole enclosure seemed to be one great field of maize. . . . . The whole population, including the official establishments, is collected in a large suburb on the east side, enclosed by an earth wall, which is now a ruin. . . . From the city of Meen (Mienhsien) eastwards, the hills recede from the river, leaving a level valley of several miles width, which extends some miles beyond Hanchung. Hwangsha (a little west of Hanchung) is a considerable town on the left bank two or three miles below the city, standing back about a li from the river. Rain prevented any extensive perambulations through the city of Hanchung, which seemed to be of moderate size. A tolerable extensive suburb separates it nearly a mile from the river on the south, and there is a much larger one outside the east gate, enclosed by a mud wall, now almost demolished."



Irrigated Valley in Han River Region

As the boatmen were not prepared to leave Hanchung for several days Mr. Wylie decided to go some distance by chair, and travelled all day over a flat country, chiefly occupied by fields of rice and maize. "At a distance of about eight miles from the city we crossed the Han in a ferry boat, the river there being about 300 yards in breadth, with shallow slope on the left bank and a deep channel and swift current on the right. . . Next day we made 30 miles, mostly over hills, passing several villages and hamlets on the way. . . . Paper is manufactured among the hills not far distant, which gives rise to a good deal of traffic. . . Taking a boat at Matsungtan, we floated down rather rapidly with the current for 17 miles to the district city. This seems to be a busy, thriving place, and there is a considerable suburb on the south side. . . . During the day we passed a number of the large water wheels used for irrigating the fields by raising water from the stream to heights of 20 or 30 feet.

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long as rail communication can be pushed through. In other parts of the world equally difficult mountains have been pierced.

A Railway into Szechwan Feasible

On this point it is fortunate that the Chinese Government is now able to speak with some authority, for a reconnaissance was recently made of the whole route up the Han, and into Szechwan, by a Chinese engineer. In a conversation just before going to press with this issue the engineer informed us that it is feasible to take a railway into Szechwan Province, via the Han River valley, without any greater difficulty than has been met by modern engineers in mountains in other countries. He is of opinion that this can be done with a maximum grade of 2 per cent over the pass west of Hanchungfu.

In commenting upon the general impression that entrance by rail into Szechwan is impossible he said that that idea became established because no one travelling the route has specially inspected it with a view to railway construction. The roads are difficult because they were built without the engineering knowledge of facilities that exist to-day, and the average traveller merely looks at the road he is on and not for possibilities of a passage in other directions. His journey was made specially for the purposes of ascertaining if a railway could be built into Szechwan and his report which is now in course of preparation will be in the affirmative. In fact he regards the Han valley route as infinitely more feasible than the projected railway via the Yangtsze valley.

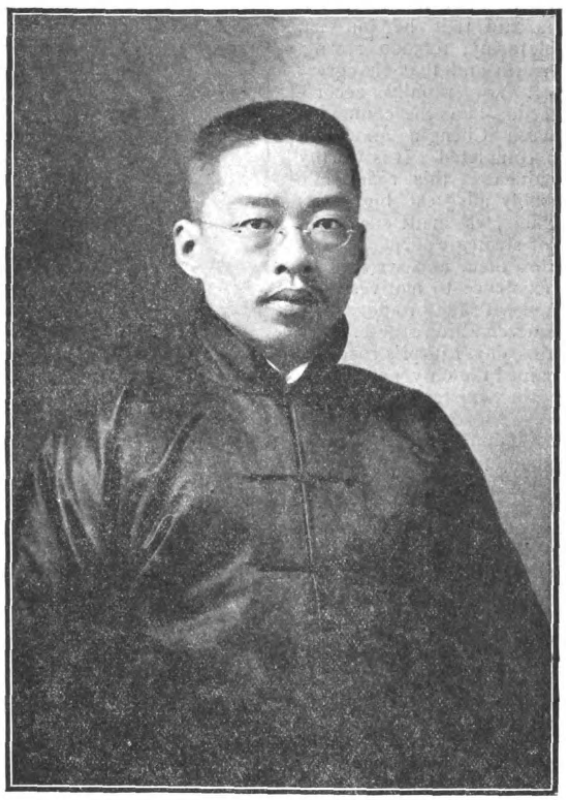
Mr. Taoyu C. Sun, the Director-General

The Director-General of both the railways awarded to the Siems-Carey Company is Mr. Taoyu C. Sun, a graduate of Cornell University, and a man of special capability and actual experience in China. It would have been difficult for the Chinese Government to have made a better choice for the important post which Mr. Sun occupies—being as it is a position requiring special knowledge of engineering, experience of Chinese conditions, and, above all, the possession of the faculty of getting on with foreigners. The three attributes mentioned are possessed by Mr. Sun and they are specially required in the work that is now under way since it is the first practical demonstration on any scale of the contract system of railroad construction in China. How this system will compare with the old method of departmental construction will depend upon those who are in charge of it, and it is essential that both the representatives of China and the contractors shall be capable and experienced men. Mr. Sun has selected a competent staff of Chinese for his department, and if these fully co-operate with the foreign engineers employed by the Government to carry out the work in their interests, and with the contractors, it is calculated as a certainty that the new lines will be built much more economically and as efficiently as any railway previously constructed in China. That, at all events, is what has to be proved in support of the contract system.

Mr. Sun was born in the district city of Shouhsien, in Anhui Province, 36 years ago. Having received the maximum Chinese education possible to Chinese youth he set out to acquire all he could in America to fit him for the civil engineering profession. In 1909 he consequently graduated from Cornell University with the degree of Civil Engineer, and returned to China to serve in the Ministry of Posts and Communications. His first actual field work in China fell to him when he was commissioned to the Peking-Mukden railway to survey and locate a crossing and extension with the South Manchuria Railway and to select a new station site. He was later appointed Junior Assistant Engineer on the Kirin-Changchun Railway. In 1910 he was awarded a Hanlin (Doctor's Degree) at a returned students competitive examination, and later in the same year was promoted Section Engineer of the Kirin-Changchun Railway, then under construction. In 1911 he was raised to the important position of Managing Director of the Kirin-Changchun Railway in charge of construction, and, later operation, and on this line he did especially good work. In 1914, he was selected as Managing-Director of the projected railway, granted to the British and Chinese Corporation to finance, from Nanking through Hunan Province. Under him the survey was completed by the Chief Engineer, Mr. Groves, and work was suspended owing to war preventing the flotation of the bonds for construction purposes.

Mr. Sun was then transferred to be Acting-Managing Director of the Shanghai-Nanking and Shanghai-Hangchow-Ningpo Railways, which post he held until the advent of the Americans in the field. With the awarding of the contract to the Siems-Carey Company for the construction of a line from Chuchow, in Hunan Province, to Chinchow (or Yamchow) in the south-western corner of Kwangtung Province, in 1916, Mr. Sun was selected as Managing-Director of the line, and when, in 1917, the line from Chowchiakow to Hsiangyang was also awarded to them he was appointed concurrently Managing-Director.

The association which Mr. Sun has thus secured with a leading American construction firm affords him a splendid



Managing Director Taoyu C. Sun

opportunity of acquiring a knowledge of the system of building railways by contract under the American practice, and such experience should be of considerable value to himself and to China. He has the capabilities to take advantage of what "new learning" might be afforded him, and likewise his character is of the kind which will assist the contractors to overcome the difficulties that many foreigners in the past have alleged are ineradicably associated with any enterprise in China.

Geology of Central Shensi

Observations in the Han Province,—Tsinlingshan and the Han Valley

[By Bailey Willis & Eliot Blackwelder*]

General statement.—The Tsinlingshan mountains and the Han valley constitute a special geologic province, by reason of

* "Research in China" by expedition of Carnegie Institution of Washington, D.C.

allowing other peoples to form their own estimates of Japan or waiting until those estimates had been formed.

It is safe enough to say that the skilful utilization of the various channels of publicity that were available to Japan—and that are available to any other nation—particularly China—has done more to make Japan the formidable factor in world's politics and world's affairs than any other side, seeming or showing of Japan, and the Japanese people. And the Japanese have worked out a system that must be admired as a practical advantage, whatever may be thought of it as an ethical proposition, by the world. It is thorough, far-reaching, and universal. It is always working. It watches every line of attack. It utilizes not alone the rich historical, ethnological and other unique features of Japan and the Japanese, and especially those that appear picturesque to the Westerner, but it ramifies to all modern activity and effort, and never fails to make it impress.

We see it working in its domestic and overseas completeness. In America, for example, there are Japanese societies, many of them, an East and West Press Bureau and a dozen others, and a constantly maintained staff of speakers, writers, and other publicity men, ever on the watch to get into print something favorable to Japan. In Japan there is the most perfect organization for obtaining and maintaining favorable opinion—friendly opinion, indeed—for Japan and the Japanese that exists in this world to-day. It is systematic, sedulous, and successful.

If any man of consequence, from America, let us say, where the Japanese need most support, comes to Japan, what is observed, unless, indeed, in the rare instance that the visitor knows what is in preparation for him and escapes it to make his own investigations? From the moment that person of consequence lands in Japan, until he leaves Japan, he is never for a minute out of the sight, or the control, of the Japanese. He is shown every attention, given social recognition, flattered by feasts and gifts, presented to the leading Japanese statesmen and business men, all of whom play their parts perfectly, and, if he is a man of great consequence, presented to the Emperor himself, or given a decoration.

That visitor does not, independently, get one impression of Japan, nor does he hear one thing about Japan, nor learn one fact about Japan, by independent investigation. *He hears what the Japanese want him to hear, learns what the Japanese want him to learn, sees what the Japanese want him to see*, and is fed and flattered and pampered and petted until he invariably comes to the thought that the Japanese are the greatest people in the world.

The reason for that, of course, is because vanity continues to be the monumental weakness of mankind. The Japanese make the visitor think he, himself, is tremendously important, and, naturally and inevitably, the visitor, having thus been elevated to the position of self-importance he has always felt to be his due, goes back to proclaim the discernment and progress and other admirable qualities of the Japanese, the clever people who realized this fact about him in such a gratifying manner.

Special testimony as to what the Japanese will do in the matter of entertaining the stranger within the gates was furnished in a speech made by Judge Gary at a luncheon tendered to him by the Japan Society of America at the Bankers Club, in New York:

"I urge all who have not seen Japan to see it as soon as is practicable," he said. "They will not regret it. In this connection I should mention the hospitable disposition of the Japanese towards the American. I have never seen it excelled. Any American gentleman who is known and is considered worthy and representative, will receive invitations by wireless for luncheons and dinners or other functions from *those who are in office or who have been in some way designated to speak for the sentiment of the people* (the italics are ours). He will be met at the ship before it is docked by a committee or delegation from the city he is approaching and *from the time he lands upon Japanese territory until he departs* (the italics are ours again) he will receive the kindest and most liberal hospitality that can be offered."

Of course, that is the Judge's idea, as it is the idea of many others who are thus entertained, of a tribute to worth and representation and so on, but those of us who know Japan know that it is a part of the great and effective publicity frame-up of Japan. And it works—it always works, and it is so easy and so inexpensive, considering the results.

In addition to this—and especial care is taken of men and women who come for the purpose of writing about Japan—the Japanese government maintains a monopoly of the press news distribution from, and in Japan. It lets nothing go out about Japan that isn't sanctioned by Japan. It holds a supervision over the Japanese press. It utilizes every avenue of publicity and sees to it that this publicity is favorable. It has its staff of men trained to give the right sort of information always on hand.

And, more than this, and most important, it maintains exactly the same sort of an organization in the United States. If any Japanese question comes up in America there always are Japanese in the big centers to present the view of Japan. There always are speakers to give Japanese opinion, and to impress Japanese ideas, at dinners, clubs, banquets, luncheons and wherever else. There always are Japanese to write to the newspapers and for the magazines, and to give lectures upon Japan, and for Japan. And the results have been amazing and prodigious.

On the other hand, what of China? Here is a country that, so far as natural interest, historical interest, human interest, political interest, and American interest go outruns Japan by ten to one. If a foreigner comes to China he gets what he can, and where he can—a distinguished foreigner, I mean. If a writer comes to China he digs out his own facts, unless he has the most important of introductions. If a Chinese question comes up in the United States there is no Chinese there to present the side of China or any in China, either. Indeed, it is not beyond the mark to say that, on the occasion of the Japanese demands, in 1915, the Japanese would have succeeded in impressing all that tyranny on China, completely as planned, had it not been for the few American and English newspaper correspondents in Peking at the time, working almost without support of information from the Chinese.

Chinese complain that China is at the mercy of every Power that cares to attack her, and it may be so, but why? Simply because China has taken no pains to make friends for China, to get support for China, to distribute and secure publicity for the real China. Most Americans think of Chinese as rat-eaters, with queues, long finger nails and so on, and know but little of the real China where the potentialities are so great, the opportunities are so many.

If the Chinese people are awake to their opportunity they will take a leaf from the book of Japan, and establish a publicity organization at home, and, better, and more useful than that, they will send to the United States a few men who can, by lecturing, speaking, writing and otherwise getting before the public, establish a Chinese propaganda. All the United States needs is to be informed about China, and who should inform them if not the Chinese? The cost would be negligible, and the results incalculable. China needs the right sort of publicity, and needs it more than any other nation in the world. If China does not take steps to put herself and hold herself before the world in this regard China need have no hope for the future. China is done, for no country will voluntarily take up the cause of China—no people. They must be made to think about China—made to! Otherwise they will neither think, nor care.

RAILWAY VERSUS OTHER TRANSPORTATION IN CHINA

When the question of the construction of any new railway in China comes up for consideration the financiers interested invariably find themselves compelled seriously to ponder the possibility of water competition militating against the commercial success of the completed line. This is due to several causes. There are so many canals in most parts of China and so many natural waterways in the central and southern portions of the country that tremendous regions are accessible. Time is so small an object with the Chinese that speed of travel and quickness of

delivery of goods have always been regarded as of little consequence, and the European has come to accept as a fact that so long as a Chinese ultimately gets to his destination the time and trouble absorbed in the effort mean nothing. The unskilled labour necessary for the poling or tracking of junks over the difficult rapids, or through the long distances of the plains when wind is not available, or the porterage of merchandise over roadless mountains, is so plentiful and so cheap that it has become a sort of axiom that it can meet the competition of railways in all circumstances. In many cases, of course, it can, but that there are exceptions is shown by the article from the Takutang correspondent of the *North-China Daily News* printed elsewhere in this issue.

The chief point of interest developed by the article is that there is a distinct and significant change coming over the Chinese traveller. He is growing out of the philosophic idea that nothing matters so long as he eventually gets whither he is bound, and the time-table promptitude of trains is gradually forcing it upon his sluggish brain that the long delays attaching to junk and launch services are not after all things to be accepted without complaint and as unavoidable. "Eleven a.m. to five p.m. is quite a moderate wait," writes the correspondent quoted. That such a thing could be tolerated by a travelling public indicates more clearly than anything else the callously indifferent and docile state of mind into which the Chinese have drifted during the centuries. Thankfulness for small mercies is here personified—a spirit that may be excellent, but which undoubtedly has been a complete deterrent in China to national or civic development upon modern lines. It is because the Chinese have permitted themselves to believe that all inconveniences and difficulties are inevitable, and can be lived down with patience, that they will not stir themselves to make reforms. Thousands of years of travel over deplorably bad roads in dust and dirt and rain and mud and slush accustoms them to jolts and jars and familiarises them to such an extent with every menacing bog hole that they have come to feel no need for improvement so long as they can extricate themselves in one piece from difficulties. They would sooner strain for hours at the immersed wheel, and unload and reload their carts, than they would spend half the time thus required to fill up the offending holes. That is why there is not a good road in China. Hardships and difficulties have no terrors for the traveller. Distances are nothing because time is nothing. A journey from Mongolia to Tibet over thousands of miles of inhospitable country, and across arid deserts and mountain ranges from ten to fifteen thousand feet high, is a thing lightly to be talked of. A "long" journey may be from Manchuria overland to southern India, and even that would be undertaken without any compunction. The pilgrims to Tibet do the journey on foot and kneel every yard or so. Is it any wonder that a race inured to such hardships and unconscious of the advantages of comfort in travelling should fail so long to see the great value of the railway train?

That the Chinese should have resisted to the utmost the introduction of the locomotive need not be surprising, nor need one be astonished to find that the existing railways are not up to the standard of those operated in other countries. What is encouraging is that in the regions where railways do operate the people are becoming increasingly appreciative of their advantages; and are willing to put up with a service which in America or Europe would not be considered fit for cattle. In fact on all the railways in China the lower class Chinese do travel in what in any other country would be cattle waggons. On the old established lines the third-class car is merely a shell with or without wooden seats placed along the sides. In these the coolies herd with their miscellaneous bundles, and sit on the seats if they can, on their bundles if they cannot get a seat, or on fellow travellers if they cannot find a seat or space to adjust a bundle. On the newer lines such as the one from Tientsin to Pukow the coolies ride in open trucks. Thousands of them can be seen any day in frozen winter or broiling summer travelling like packed sardines, all in good humour and apparently enjoying to the full the unrestricted view; and quite oblivious of the swirling dust which makes travel across the great plains a trial even in the cars provided for Europeans. In the second-class compartments there is no comfort for long journeys. The travellers herd together with all their possessions, pile them between the seats made to hold two people, up on the limited rack space, or in the corridors, and on these goods and chattels the owners perch, and over them other passengers scramble and tumble every time they wish to move. And they travel in this discomfort and tumble time and again over the other fellow's bedding and dishes and baskets without a grunt of disapproval.

Because they know nothing of the methods of railway operation elsewhere, and because they think that what they get is much better than their forbears ever could have imagined in their wildest dreams, they make no complaint of the service, and strive in no way for betterment. And because the passengers say nothing the railway officials (who are Chinese, of course) of their own volition do nothing to improve conditions or even keep the cars sanitary. The same can be said of what are called the first-class coaches. They are abominable in their filthiness, and no other country in the world would tolerate them even for the purpose of carrying coolies. Shortage of money is the excuse for not installing up-to-date passenger trains: and peculation, it may be said, is the chief cause of the shortage. These conditions could be corrected quickly, of course, if the lines were under proper management, and they are only allowed to exist because the Chinese claim that they know all about railway practice and need neither foreign help nor supervision. The disabilities of travel are mentioned here, however, merely to emphasise how little the Chinese ask of those who are catering for their transportation, and to indicate what a potential field China is for railway development along lines calling for the plainest kind of passenger carrying equipment. The Chinese themselves make no demand for artistic furnishings or ornate upholstery, or swank and swagger such as is seen on the first-class trains abroad. They do not even demand cleanliness. A roof, a floor, some sides, and some wooden slabs for seats, will suffice, though they are content to do without the seats; and, as shown, even without the roof and sides. So the railway builder has nothing to fear in the way of criticism if he does not instal the latest type of Pullman for the use of the Chinese. The unhappy feature of this state of mind is, of course, that the European passengers are also compelled to put up with shockingly bad accommodation and this is a condition that the railway authorities should bend every effort to correct, for the encouragement of tourists should be one of the main industries of the country—as it is in Japan. What will happen if a change is not made, will be that travellers bound from Shanghai northwards will, unless in a great hurry, abandon the railway and take passage by steamer to Tientsin, and thus a source of substantial revenue will be lost.

Apart from the foreign traffic, however, the fact is worthy of note that the Chinese are undergoing a tremendous change of mind and habit owing to railway development, and more and more of them are travelling, and will travel with the expansion of the services. The existing railways now carry almost all the Chinese passengers that the present rolling stock can transport, and there is nothing more certain on this earth than that every new railway built in the country will find all it can desire in the way of native passengers at least. And freight, like the passenger, will ultimately abandon the slow, tedious, and damaging methods of transport that have so long been the only ones in the country, for the quicker and the safer railway. Already some of the lines have all the freight they can carry, but with proper traffic management under foreign experts would increase the earning capacity and the effectiveness of the railways a hundredfold, and supply the people with an infinitely better service.

THE CHINESE AND THE RAILWAY

Triumph of Modern Methods Over the Old in Kiangsi Province

The following interesting article on the old and new means of transportation in Kiangsi Province was sent to the "North-China Daily News" by its Takutang correspondent:

The survival of the fittest is an old doctrine, but it still exists and we are having a demonstration of its existence in Kiangsi just now. For some months past a life-and-death struggle has been going on between the steamboats and the railway. The struggle was a keen one as the steamboats were prepared to die hard. Steamboats and railways unless owned by the same proprietor have always lived in a state of armed neutrality. The shipowners are about to give up what to them has been a hard struggle. The steamboat companies reduced their fares from Kiukiang to the capital; they catered as never before to the fast-dwindling passengers; they focussed on cargo; they towed large junks, but all to no avail. The railway service had gained the day and the steamers are now unable to compete.

The railway company made competition almost impossible. The novelty of a railway; a fast service; cheap fares; accommodating rich and poor; a safe instead of a precarious terminus, all these have more than staggered the steamer companies for more than two years. A Chinese appreciates a cheap thing, so the railway company ran what they called a "poor man's carriage." This consisted of an open truck, seatless and roofless. The poor man sat on his humble belongings, enjoyed fresh air, beautiful scenery and a hundred-mile ride for 50 or 60 cents. In a country like China where the rich man is not ashamed of being poor the "p'in ch'iong ch'ae" was naturally well patronized. Europeans and literati usually travel first and second class.

Punctuality by Train

Traffic, slowly but surely, centred on the railways. The train was timed to start at a certain hour and generally accomplished the astounding feat. There was a business-like air about the railway and unconsciously Chinese came to appreciate this. The novelty of eating your breakfast in Kiukiang and your dinner in Nanchang was sufficient to encourage travel by that route.

A Chinese steamboat is booked to start any time. Eleven a.m. till five p.m. is quite a moderate wait. One cold wintry day I boarded a Lake steamer at Kiukiang about two o'clock. I did so rather hurriedly as I was told it was about to start. However, I was disappointed. Three o'clock came and so did four and so did five and the steamer was still about to start. A European who had been on board since ten o'clock came upon deck. He looked at me with anything but a kindly expression and demanded in anything but kindly language when the steamer would start. To such a query I was entirely unable to give a satisfactory answer, nor could I direct him to anyone likely to know. Hours of waiting had made his vocabulary short and sharp. He had now waited too long to change his mind and go ashore.

When Do We Start?

Frequently we have been in the midst of tiffin when the steamer's departure has been announced. Gathering up our belongings we have rushed breathlessly to catch this Chinese steamer. On arriving alongside we heard the whistle blowing furiously and the steamlaunch showing every symptom of starting immediately. Steamboat companies announce their time of sailing in two ways. First, a white board is hung outside the steamship office announcing the fact that a steamlaunch will leave to-day. Second, the steamer will start blowing its whistle as early as seven a.m. and continue blowing at intervals till seven p.m. There is a reason for this. They blow for passengers and until they get them are not prepared to start. Indefiniteness characterizes all the steamboat companies plying on this Poyang Lake. No one can tell you definitely when the steamer will leave. The language one constantly hears is "chiu iao k'ai" and "k'uai iao k'ai" and "ch'a puh to k'ai."

When the steamlaunch starts there is generally a good deal of excitement. Numbers clamber on board just as the steamer leaves, while those who have entertained the weary passengers for hours seek the shore. Among the latter are beggars of a frightfully tenacious type, vendors of sweetmeats, foodstuffs, wearing appparel, cigarettes and wines; dancers whose screeching music nearly tears your waiting soul to pieces; and singers whose loathsome songs haunt you with their words. The passengers are divided into three classes: first, official class, second, middle class, and third, "awning class." There are no hard and fast distinctions.

Before the advent of the railway, steamboats up the Poyang carried a strange and motley company. The official with his retinue, the merchant with his wares, the student with his companions, the husband with his family, the European with his servant, are all more or less mixed up within the narrow confines of a lake steamboat. The large steamers have two decks, sometimes excellent accommodation is provided with rather indifferent fare. The "awning class" have simply rice, the middle class a little vegetable and the first class a small variety of Chinese dishes. No provision is made for the European traveller. He provides his own bedding and if unable to eat Chinese fare supplies his own foreign food. The date of arrival at any port is perhaps more indefinite than the time of departure.

Huk'ow, the first port of call, stands at the mouth of the Poyang Lake. Here two hours may be spent while a number of officials, high and low, ask you rather vaguely where you have come from and where you are going. At this place the Chinese have their luggage ruthlessly examined,—the reason given, the fear of bombs being carried into the province. Suspicious characters are also cross-examined; passing officials are visited by other officials from the shore; and merchants carrying merchandise pay likin at the Huk ow barrier. As the steamer is hampered by no schedule the authorities are in no hurry one way or another. Your interests, or the importance of your business, or the status of the Chinese official make little difference to the steamboat company. There is a species of waiting to be gone through, tedious to you but not to the company. The officials on the shore wait on the steamer and the authorities on the steamer wait on the officials, and the passengers, in no decided hurry, wait on both.

A Midnight Landing

Another 10 miles brings the crowded steamer to Takutang. Midnight is now slowly creeping on and many of the passengers have retired. The night is rather stormy and the sampan has some difficulty in getting alongside a moving steamer. In the dim light of a Chinese lantern your luggage is dropped over and then you follow suit. "All clear" is shouted and the steamer proceeds in the darkness up the Poyang Lake. Places of interest such as the Orphan Island, the Frog Rock, the Fire Mountain, the Old Man's Temple and the Kuling Mountains are all passed in the darkness. Huk'ow is usually seen just at twilight. The beautiful temple on the Stone Bell hill is barely visible, while the city lying along the shore is only seen in outline.

To the European, the journey is interesting purely as a Chinese characteristic. The steamers entirely dispense with wharfs. Your embarkation may be dignified or otherwise; it depends entirely how you look at it and what position you hold. If you are prepared to take things as you find them, forget in the meantime your lordliness, sit demurely in a Chinese sampan, disembarkation can be, if anything, more precarious than embarkation.

This mode of travel, once so full of interest, comes to a stop with the Chinese New Year. Several firms are winding up business, competition with the railway they find impossible. Financial distress has been very keen.

With the opening of goods traffic on the railway, merchants in the interior find they can get their goods to Kiukiang quicker and cheaper than by junk or steamer. Traffic on the Poyang is now considerably less compared with former years and the Customs and likin receipts have suffered in consequence.

SOUTH SEA TIMBER COMPANY

A score of prominent Kobe businessmen are engaged on a project for establishing the South Sea Timber Co. Mr. Sato Tamanosuke, who is said to be intimately acquainted with South Seas affairs, in July, 1913, obtained sole right to dispose of certain timber. On his return home, he executed the first transaction in August, 1914, supported by Mr. Sato Yutaro, a well-known shipping broker, and Mr. Kano Tatsuzo, proprietor of the Shinkyu Kumi. The enterprise, however, was brought to a standstill by the war owing to the advance in freights. Mr. Sato, the original promoter of the business, has now enlisted the support of a score of prominent businessmen, and has undertaken the establishment of the company above referred to. It will have a capital of 1,000,000 yen.

COTTON PIECE GOODS IN NORTHERN CHINA

According to the Report for 1915 of the Commissioner of Customs at Tientsin, the difficulty experienced in obtaining adequate supplies of cotton piece-goods from abroad has resulted in a considerable stimulus to the manufacture of these goods by local Chinese factories. Factories equipped with modern machinery were erected in several localities under Chinese management and using Chinese labour, foreign experts being engaged to teach the best methods of manufacture and how to make the best use of the machinery.

The products of these factories correspond in weight and design to the imported goods, and compete profitably in the open market with similar goods manufactured abroad, the tendency among buyers being apparently in favour of Chinese-made goods in preference to the cheap varieties imported from Japan, or the higher and more expensive grades coming from Europe and America. A group of Chinese merchants has also placed orders in America for the latest spinning machinery, to be used in two new mills for the making of cotton yarn. If these should prove a success, there is no doubt that similar plants will be erected in other parts of North-China.

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Siamese Northern Railway.—The report of the operation of the Siamese Northern Railway for the fiscal year ended March 31, 1916, has been published. At the close of the year the total length of the line open for traffic was 871.7 kilometers (541.6 miles), of which 35.7 kilometers had been opened during the year. The gross receipts amounted to $1,811,894, against $1,662,593 in the preceding year, and the net profit, after making deductions for the renovation fund, amounted to 5.48 per cent on the capital outlay of $21,509,721 on all the open lines at the close of the year, as compared with 4.74 per cent in the preceding year. The number of ordinary passengers carried was 2,509,730, an increase of 179,234, as compared with the preceding year. The quantity of goods carried was 380,737 tons, an increase of 12,602 tons over last year. The live stock transported amounted to 105,533 head, an increase of 28,469. Among the commodities carried showing an increase over the preceding year were: Betel nuts, 679 tons; cement and cement ware, 668 tons; coconuts, 645 tons; kapi (a Siamese condiment made from prawns), 424 tons; salt, 2,248 tons; rice, 2,512 tons. A new item consisted of 23,110 tons of marl for the recently established cement factory. The extension of the northern line is proceeding, and in about one year it is expected that trains will be running as far as Chiengmai, the northern capital of the Kingdom.

American Locomotives in China.—Twenty railway locomotives of American make for use on Chinese railways have been received at Wuchang. Ten of these are to be used on the railway from Wuchang to Changsha, which is expected to be opened in March, 1917, and which is being built from funds provided by the Hukuang loan. The other 10 locomotives are for the Peking-Hankow Railway line.

Light Railway from Swatow to Changlin.—A company under the title of the Swatow-Changlin Light Railway Service has been inaugurated at Swatow and the sanction to construct and operate the line has been granted by the local authorities. The aim of the company is to build and operate a line of light railway from Swatow to an interior point called Changlin, a distance of about 20 miles, via Chenghai, a city situated midway between the two termini. It is reported that the capital will be $500,000 local currency (about $250,000 United States currency). Construction of the roadbed has been begun. The cars to be used on the line will be very small and light, so that they may be pushed along by men, a system which, it is claimed, has given satisfaction in Formosa.

Kaifeng to Shanghai, 24 Hours.—Commenting on railway development in central China the *Peking Daily News'* Kaifeng correspondent writes:—Kaifeng is now on the map. We are now within twenty-four hours of Shanghai. These notes are being mailed on the first train to run on the new schedule. A new sleeping car service on the Lung-Hai connects at Hsuchow with the Tientsin-Pukow and cuts out a nasty night stop-over. One can now leave Shanghai at 7.55 a.m. and reach Kaifeng the next morning at 7.50. Other changes are made on the Hankow-Pukow line in adjustment with the east and west line. "Every man for himself and the Devil take the hindmost" seems to have been the policy hitherto practised in making railway schedules, as it has been with other things in China. Each line has had its time-table in force without regard to connexions or comfort of passengers. Coming from Peking one had to spend the night at Chengchow before he could go on to Kaifeng. From Kaifeng to Shanghai the same thing took place at Hsuchow. Finally, the roads are getting together and the public will rise up *en masse* and call their managers blessed. Let us record the fact once more that in China "things do move." Only a short time ago it took five or six days to go from Kaifeng *via* Hankow to Shanghai. It yet takes three days to go down the river from Hankow to Shanghai; but one can go from Hankow *via* Kaifeng and Hsuchow in a day and a half. We welcome all such travellers to the new name on the map—Kaifeng—the ancient capital of China.

Railroads in Siam.—Progress in the construction of Siamese railroads foreshadows the establishment of a rapid land route between the Gulf of Bengal and the China Sea. As soon as the Siamese railroads become linked with the systems in China and Indo-China an overland short-cut will become available and the long voyage around Singapore may be avoided.

The first railroad in Siam was opened in 1897 and ran between Bangkok and Ayuthia, the old capital (Suppl. to Commerce Reports No. 58a, Nov. 6, 1916). This, the northern part of the system, has steadily been extended up the valley of the Menam River and beyond, where it now reaches Lampang, on the upper Meping, a western tributary of the Menam. The short distance to Chiengmai, the northern capital, will be completed before long. The region to be tapped here is rich in natural resources. With adequate transportation its products will find a ready market in Bangkok. The southern part of the system embraces the coastal districts of the Gulf of Siam. Of a total of 470 miles, 120 miles were in operation on April 1, 1915. Its most important section will eventually run along the whole length of the Malay Peninsula.—*The Geographical Review.*

Tokyo-Yokohama Suburban Road.—The Imperial Railway Bureau has started an investigation with the view to constructing another electric line from the suburbs of Tokyo to Yokohama, similar to the present Tokyo-Sakuragicho line. The new line would be an extension of the suburban line which now encircles the city of Tokyo. Should it be built, suburban towns between Tokyo and Yokohama are expected to receive great benefits, as well as the residents in the two cities. Plans also are being made to increase the number of electric trains and shorten the time between Tokyo and Sakuragicho, when the elevated line between the Yokohama and Sakuragicho stations is completed next April.

Shanghai Tramways.—The following is the Traffic Return of the Shanghai Tramways (Foreign Settlement) for February, 1917, and for 2 months ended 28th February, 1917, with figures for the corresponding periods last year:—

	February, 1917.	February, 1916.
Gross Receipts.....	$119,893.35	$112,167.15
Loss by currency depreciation ...	27,507.70	29,895.00
Effective Receipts	M. $ 92,385.65	M. $ 82,272.15
Percentage of loss by currency depreciation	24.37	28.35
Car Miles run ...	304,001	271,357
Passengers carried	5,303,070	4,897,821
	2 Months ended 28th February, 1917.	2 Months ended 28th February, 1916.
Gross Receipts ...	$256,879.89	$232,190.38
Loss by currency depreciation	57,437.49	59,551.45
Effective Receipts	M. $199,442.40	M. $172,638.93
Percentage of loss by currency depreciation	23.68	27.25
Car Miles run ...	636,234	563,495
Passengers carried	11,490,658	10,214,550

SHIPPING

Shipping Conditions in China.—The high freight rates prevailing during 1915 and the first half of 1916 have had a marked effect on China's trade. Freight rates increased from 300 per cent to 500 per cent above the rates prevailing before the war, and this, in connection with the shortage of tonnage, operated to paralyze the export trade, notwithstanding the greatly increased demand for China's products due to the war. Export freight rates from China are now rapidly approaching normal, due perhaps largely to the present high value of silver, the highest in 30 years. This high rate of silver exchange operates against exports also, its practical effect being to increase greatly the original first cost. Thus, with pre-war normal exchange, for a product offered at 2.25 Mexican dollars, America would have to pay only $1 gold. At the present rate prices are 30 per cent higher on account of exchange alone. While freight rates and high value of silver both tend to reduce the volume of exports, the consequent loss of profits to the American exporter in China is partially offset by his increased commissions. The American exporter does not, as a rule, buy stocks except to fill orders. His practice is to obtain local prices, figure the c. i. f. cost, and make quotations based upon that cost plus his commission, so that the higher the freights and the higher the exchange rate, the greater will be his commissions on such business as he is able to procure. This compensating advantage of high rates is not shared in by the producer.

Panama Canal Traffic.—During November 148 vessels of 436,204 net tons (canal measurement) passed through the Panama Canal, 72 of them (net tonnage 220,806) in transit from the Atlantic to the Pacific Ocean and 76 (net tonnage 215,398) from the Pacific to the Atlantic. They carried 519,043 tons of cargo (198,718 tons from the Atlantic to the Pacific; 320,325 tons from the Pacific to the Atlantic). The tolls earned during the month totaled

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CHEN CHIN TAO

CHINA'S MINISTER OF FINANCE

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RAILWAYS

Kiangsu Railway Project.—According to the British Consul General at Nanking there is but little to report regarding railways. The proposed Wusih-Huchow Railway has been duly registered in Kiangsu, Anhui and Chekiang, the three provinces through which the line is to run, but nothing else seems to have been done. It is possible that an attempt may be made to start work in the spring, always provided it has been found possible to raise suffieient funds.

In the Provincial Assembly the suggestion was that the extention of the Lung-Hai Railway to the coast should run through Tsingkiangpu to Haichow, instead of direct to the latter place; while Tsingkiangpu was then to be connected by rail with Chinkiang along the line of the Grand Canal. That the Central Government is inclined to frown on this proposal is indicated by the fact that it intimated the capital must be raised locally, which is usually quite sufficient to prevent any schemes of this nature from materialising.

Railroads in Siberia.—The *Priamurie*, recalling that March 17, 1917, will mark the twenty-sixth year since the beginning of the construction of the Ussuri Railroad, gives the following details of the Great Siberian Line:

The Amur Railroad, with the exception of the Amur bridge, is complete. Its total length from the station Kuenga to Khabarovsk is 1,247⅓ miles; the branch line from Bochkarevo to Blagovyeshtchensk is 68 miles long (from Kuenga to Blagovyeshtchensk the distance is 90⅔ miles); small branch lines—Tchassovinskaya, Reinovskaya, Tcherniaevskaya, Innokentievskaya, Vladimirovskaya, and others—118 miles. The Ussuri Railroad from Vladivostok to Khabarovsk is 478 miles long; from station Nikolsk-Ussurisk to station Pogranitchnaya, of the Chinese Eastern Railroad, 76⅔ miles. It has 22⅔ miles of spur lines.

In the 25 years since the beginning of construction of the Great Siberian Line, there have been built in Russian territory alone 5,255⅓ miles of railroads divided as follows: Samara Ufa Tchelyabinsk (Samara-Slatoustovskaya Railroad), 628 miles; Tchelyabinsk-Irkutsk (Omsk and Tomsk line), 2,044 miles; Irkutsk-Kuenga (Transbaikal line), 858 miles; Kuenga-Khabarovsk (Amur line), 1,247⅓ miles; Khabarovsk-Vladivostok (Ussuri line), 478 miles.

The distance from Samara to Vladivostok via the Chinese Eastern Railroad is 4,692 miles; Samara-Irkutsk, 2,672 miles; Irkutsk-Manchuria, 948⅔ miles; Manchuria-Pogranitchnaya, 926 miles; Pogranitchanaya-Vladivostok, 145⅓ miles.

The following lines in Siberia are also completed: Altai Railroad, 500 miles; Atchinsk-Minusinsk Railroad, 287⅓ miles; Kolchuginskaya Railroad, 139⅓ miles; Kulundinskaya Railroad, 196⅔ miles (over 66 miles ready); Omsk-Tyumen line, 354⅔ miles. The Siberian and Transbaikal Railroads are double tracked to a great extent. The Ussuri line has undergone an almost entire reconstruction.

New Siberian Railways.—According to "Torgovo-Promyslennsya Gazeta" (Petrograd) the Committee for the Construction of New Railways have decided on the construction of lines, as follows:—

Caucasus:—The construction of a line from Grachi to Tikhoretskaya is to be undertaken first, and then lines from Tikhoretskaya to Byelorechenskaya, and from Novogeorgievsk to Orel.

Siberia:—The Kostroma-Krasoufimsk-Ufalei-Ishim-Tomsk line is to be constructed first. In Southern Siberia a line from Orsk to Akmolinsk and Pavlodar is to be built, with a branch from Akmolinsk to Semipalatinsk. In the Lena region the Irkutsk-Ust-Igli line is to be constructed first.

Man Power Tramway at Swatow.—Particulars of the light railway, mentioned in report by Mr. S. Wyatt Smith, show that the scheme contemplates a man-hauled tramway only. The promotors are five local Chinese merchants, one a native of Formosa. The capital of the Company, known as the Swatow Chunglim Light Convenient Railway Company, is $150,000, divided into 3,000 shares of $50 each. The total length of the line is about twenty miles. The line runs through a thickly populated district from Kialat, the suburb of Swatow, via Chenghai, Neiyang and Tanglee to Chunglim. The gauge of the line is 19 inches, and the rails, cars and other material are being imported from Japan. Work is already in progress under the supervision of a Japanese civil engineer, and should be completed by April. The cars, which are to be pushed from behind by coolies, are small and capable of seating four persons only.

FINANCE

Hongkong Bank Notes.—The returns of the average amount of bank notes in circulation and of specie in reserve in Hongkong, during the month ended January 31st, 1917, as certified by the Managers of the respective Banks, are as follows:—

Chartered Bank of India, Australia and China	$7,831,352	$5,000,000*
Hongkong and Shanghai Banking Corporation	26,230,516	20,000,000
Mercantile Bank of India, Ltd.	1,079,489	550,000†
Total	$35,141,357	25,550,000

* Sterling Securities deposited with the Crown Agents valued at £150,000.
† Securities with the Crown Agents £70,000.

Japan's Revenue Results.—The actual results of revenue for the present fiscal year, as shown in the official statement published by the Japanese Department of Finance, are quite favourable and the total increment as compared with the previous year comes to 83,628,810.346 yen. Up to December the Government floated loans and drew on the balance brought over to no small extent, and that is largely responsible for the increment in extraordinary revenue. The net increase in revenue, therefore, is estimated at 41,793,779 649 yen, for which tax revenue and receipts from State undertakings and State property are largely responsible.

The increment in tax receipts is estimated, at the end of December last, at 18,047,424.232 yen. The only exception to the general rule is land tax, which fell away to the extent of 444,798.232 yen to the close of last year. Income tax receipts, on the other hand, witnessed so large an increase as 5,026,840.220 yen probably as the result of prosperity in business circles. Customs revenue also showed a fairly large increase by 2,412,811.895 yen, evidently as the result of the improvement recorded in the import trade.

State undertakings and State property witnessed an increase by 18,939,021.934 yen in the total receipts. Among those items postal, telegraphic, and telephonic services fetched 7,538,370.904 yen more during the nine months of the year because owing to the war and the resulting increase in telegraphic communications, overseas telegraph operations were extraordinarily active. Stamp duties also maintained the mark scored before quite well, recording an increment by 4,386,623.127 yen.

The following is the summary of the official statement:

Items	Figures for 1916	Figures for 1915
Ordinary.		
Tax receipts	175,161,093.117	157,113,668.835
Land tax	26,250,007.715	26,694,865.948
Income tax	23,690,897.415	18,663,957.195
Business tax	13,724,084.125	13,168,011.880
Sake tax	44,772,831.732	41,847,911.957
Sugar Consumption tax	16,556.035.180	13,202,912.780
Textile tax	10,424,270.840	9,788,767.880
Customs duties	23,822,880.830	21,107,213.385
Others	15,822,880.830	21,640,027.860
Stamp duties	23,252,573.330	18,875,950.203
State undertakings and State property	68,604,121.747	49,665,099.813
Miscellaneous	3,750,524.636	2,388,621.010
Transferred from the account of Taiwan	3,689,029.060	3,000,000.000
Transferred from the account of Chosen	4,166,333.504	5,796,555.834
Extraordinary.		
Proceeds of loans	1,276,744.000	474,012.000
Balance brought over	125,346,009.185	86,227,645.331
Others	27,692,353.954	25,778,439.111

MINES

Tungsten in Malay Peninsula.—The Malay States Information Agency in London calls attention to the following particulars regarding the exports of tungsten ores from Malaya, taken from the last report of the Senior Warden of Mines in the Federated Malay States:—

It is not generally realised that tungsten ores do not occur in the Federated Malay States in defined deposits; by far the greater

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THE FAR EASTERN REVIEW

遠東時報

Engineering
Finance ✻ Commerce

Vol. XIII., No. 11 SHANGHAI ✣ PEKING ✣ MANILA April, 1917

CHINA'S BREAK WITH GERMANY

Asia Against the White Man

West River Conservancy Board's Report

Industrial Transformation of China

Japanese Railway Report

TANG SHAO-YI, FORMER PREMIER, OF THE REPUBLIC OF CHINA

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ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

CHRONOLOGY OF CHINESE RAILWAY BUILDING

The following is a chronological table prepared by the Chinese authorities to show the progress of railway construction in China:

1863: The construction of a railway line between Shanghai and Suchow was attempted by certain British residents at Shanghai.

1865: The Shanghai-Woosung line was promoted, which was completed in 1876, that is Kwangshu 2nd Year. In 1877 the rails were torn up and sent to Formosa.

1880: The Tangshan Mining Railway was constructed.

1888: The Ching-Feng (Peking-Mukden) Line reached Tientsin.

1892: Work on the Tayeh Railway was commenced.

1893: The Ching-Feng Line reached Shanhaikwan.

1896: The agreement for the Lungchow line and another for the Tien-Yueh Railway were concluded. Russia obtained a railway concession.

1897: The Belgian loan for the Ching-Han (Peking-Hankow) Railway was concluded and work was started.

1898: The Belgian Loan for the Ching-Han Line was amended. Great Britain obtained the concession for the Tao-Tsing (Tookou-Chinghua, Honan) Line. The railway between Shanghai and Woosung was reconstructed. The British loan for the Ching-Han Railway was concluded.

1899: The Cheng-Tai (Chengtingfu-Taiyuanfu, Shansi) Railway Loan was concluded, as well as the Tsin-Pu (Tientsin-Pukow) Railway Loan.

1901: The Chinese Eastern Railway was completed.

1903: The Tung-Pu (Tatung-Puchow, Shansi) Railway was promoted. the Shanghai-Ningpo Railway Loan was concluded, and the Canton-Fatshan section of the Canton-Hankow Railway was opened to traffic.

1904: The Hsiling line was completed; the Kiaochow Railway was also completed; the Fatshan-Samshui Section on the Canton-Hankow line was opened to traffic.

1905: The Tao-Tsing line was constructed, which was purchased by the Government. The Ping-Chu Line was opened to traffic. The entire line of the Peking-Hankow Railway was completed. Russia ceded the southern portion of the Manchuria Railway to Japan.

1906: The Canton Railway Co. was organized. Work on the Wuhu-Canton Railway was started. Traffic on the Shanghai-Ningpo and the Chaochow-Swatow Railways was opened during the year.

1907: The Kowloon-Canton Railway and the Kirin-Changchun Railway Loans were concluded. The 2nd loan of the Tsin-Pu Railway was also concluded.

1909: The British loan for the Shanghai-Hangchow Railway was concluded. During the year, the Peking-Kalgan Railway was constructed, the concession for the Kiaochow-Ichow Line was recovered, the Nanking City Railway was completed, the Kaifeng-Loyang line was opened to traffic, and the loan for Hsinmintun-Mukden Railway was concluded.

1910: Work on the Ichang-Kweichow section on the Hankow-Szechuan Railway was commenced, the Tien-Yuen line was opened to traffic, the Loyang-Tungkwan Railway was completed, a section of the Nanhsun Railway was also opened to traffic, the loan repurchasing the Peking-Hankow line was concluded, the 3rd Tsin-Pu Railway Loan was also concluded, the line having reached Taian during the year, and a section of the Canton-Kowloon line was completed, while the Changchow-Amoy Railway reached Shih-i.

1911: A part of the Kai-Hai Railway was opened to traffic, the new Ching-Han Railway loan was concluded, the Changsha-Chuchow section on the Canton-Hankow Railway was completed, the Kowloon-Canton Railway was opened to traffic, and the railhead of the Southern Section of the Tsin-Pu Railway reached Likuo.

1912: The railhead of the Canton portion of the Canton-Hankow line was pushed to Lienkiangkow, the Kiukiang-Tehan section on the Nanhsun Railway was opened to traffic, the Tsin-Pu Railway was completed, the Hainan Railway loan was concluded, the Kirin-Changchun Railway was opened to traffic, and the Yenchow-Tsining Branch on the Tsin-Pu line was constructed.

1913: The Kalgan-Yangkao section of the Kalgan-Suiyuan Railway was opened to traffic, the An-Cheng Railway and Tungch'eng Railway loans were concluded, work on the Chang-Wang Railway was started, the agreement to construct 5 railways in Manchuria and Mongolia with Sino-Japanese capital was concluded, Russia demanded several railway concessions in North Manchuria, the Canton Railway and the Hupeh Kweichow Railway loans were concluded, and the Tsinan-Shunteh and Kaomi-Hanchuang Railway Agreements were signed.

1914: The Ning-Siang Railway agreement was concluded, the railhead of the Kalgan-Suiyuan Railway reached Tatung, whilst that of the Canton-Hankow line was pushed to Wushih.

1915: The railway round the city walls of Peking was opened to traffic, a section of the Nanshun Railway was completed, and the Changsha-Yochow section on the Canton-Hankow Railway was constructed.

1916: Work connecting the Shanghai-Ningpo and the Shanghai-Hangchow Railway was completed and the Wuchang-Puchi section on the Canton-Hankow line was also completed.

RAILWAYS

Ssupingkai Chengchiatun Railway.—The Ssupingkai Chengchiatun Railway loan amount is S. Y5,000,000, of which only S. Y3,500,000 is available for the construction work. This appropriation falls far short of the requirements, although the line is only 53 miles long, especially as the prices of steel and other materials have abnormally risen. Mr. Wu, the Director General of the Railway, has been in Peking negotiating with the Communications Authorities there to obtain additional funds to make up for the shortage. An official of the Railway who proceeded to Peking in company with the Director, returned recently and stated that Director Wu, assisted by Mr. Fujine (Chief Engineer), was negotiating with the Communications Ministry for an increase in the loan on the plea that the abnormal rise in price of materials and other causes had created a serious deficit in the funds. It was said that the authorities might have to reduce the Railway estimates for the current year. Mr. Fujine will inspect the rails at the steel works of the Hanyehping Co. with which the order for rails and accessories has been placed. As regards North Manchuria timber for the use of the Line, the purchase of which was entrusted to the North Manchuria Railway Co. Stores Section, its transportation by the Chinese Eastern Railway, under the existing shortage of rolling stock on the Harbin-Kwanchengtzu section, is progressing in a most unsatisfactory manner. As the authorities are eager to hurry the construction work, they are collecting building materials to complete the whole work before next Winter if possible. For financial reasons the bridge over the Liao at Sankiangkou is to be a temporary affair built of wood, and the necessary timber is being carted from Kirin.

Tramway Accidents 8.49 Per Million.—A table of casualties, prepared by the management of the Shanghai Tramways Company, shows that the concern has had a remarkable record for safety. Last year the trams carried 69,089,000 passengers and the casualty list was only 8.49 per million, whilst the cases of personal injury were only 3.97 per million. The full table follows:

	Total Passengers (thousand)	Total Number of Accidents per million passengers	Cases of personal injury per million passengers
1909	11,772	46.72	19.54
1910	18,751	33.92	18.82
1911	27,257	23.18	14.60
1912	40,734	18.24	10.85
1913	47,686	16.10	8.03
1914	55,647	13.62	6.27
1915	59,750	9.44	5.16
1916	69,089	8.49	3.97

This record shows a remarkable diminution both in the total number of accidents and in the number of cases of personal injury in relation to the passengers carried.

South Manchuria Ry. Rolling Stock.—About 3,200 goods cars now are in service on the South Manchuria Railway lines. This number is anything but adequate, judging from the quantity of goods being carried by the lines every year. It is said an appropriation for 200 new goods cars has been included in the company's estimates for the next fiscal year. The work of altering the passenger cars has been taken in hand and many third class cars are already in operation. The authorities plan the construction of some new 1st and 2nd class cars whilst pushing forward the alteration work as rapidly as possible. When the alterations are finished, the existing fare schedule is to be reorganized.

As the development of the Railway Area and the interior of South Manchuria in general advances, the 60 lb. rails laid under the Russian regime are now in process of replacement with a 80 lb. variety. In the present fiscal year much difficulty has been met with in obtaining a supply, and it has been only through the Japanese Government Steel Works, Edamitsu, that some substitution work could be done. Many of the 60 lb. rails failed to withstand the test of the severe cold of the Winter. The Company now proposes to complete the replacing of all the lighter rails in the course of the next fiscal year. A total length of about 48 miles will be

required, mainly in the districts under the locomotive superintendents at Mukden and Tiehling.

Chinese Eastern Goods Cars.—Goods cars of the Chinese Eastern Railway which had been sent to European Russia and had failed to return to the Far East a short time ago totalled 6,000. Some days ago, the badly needed cars began to arrive at Harbin.

The report that the car shortage was broken reacted like magic on the produce market. At Anta Station, for instance, beans rose by 23 kopeks and at Harbin by 20 kopeks in a day.

Sino-Japanese Freight Agency.—A scheme is under way for a forwarding agency under joint Sino-Japanese management to supply the gap in the through goods traffic between the two countries. The agency plan is supported on the Chinese side by Mr. J. E. Foley, Traffic Manager of the Peking-Mukden Railway and by Mr. Yoshio Kinoshita, Councillor of the Imperial Government Railways, who have been nominated on the Executive Committee.

The plan was to be brought into effect simultaneously with the opening of the through goods traffic between the two countries.

Szechuen-Hankow Lines.—According to Chinese press reports work on the Szechuen-Hankow Railway has made much progress and rails have been laid for eighty Chinese miles between Hankow and Tsaitien. The work to Ichang will be completed in the Autumn of 1917.

Cost of Wu-Pu Section of Canton-Hankow Line.—Although the Wu-Pu section of the Canton-Hankow Railway has been opened for traffic, the report of all expenditure for wages, materials and construction work has not yet been furnished to the Board of Communications. Mr. Yen, Managing Director of the Railway Office, has now given orders to all Chinese and Foreign engineers in the various divisions to furnish reports with regard to the same. It is estimated that the whole amount expended for the line between Wuchang and Puchi will be over $19,000,000, which makes about $5,000 for every Chinese li or $12,500 a mile. It is reported that the great iron bridge at the North Gate of Puchi on the Canton-Hankow Railway has been completed and the rails already laid. In consequence of the coming tea season, the road between Yanglotung and Puchi will be very crowded, so the Railway Office has issued an order directing that the construction work should be completed immediately for the convenience of transporting tea. It is proposed to open the traffic business in May.

Kiukiang-Wuchang Project.—With a view to improve communications in the centre part of China, Mr. Chen Cho-tang, an ex-Taoyin of Szechuen, proposes to build a railway between Wuchang and Kiukiang. An application for registration has been forwarded to the Board of Communications and a copy of the proposals in 75 paragraphs had been sent to Tuchun H. E. Wang and the Kiang-Han Taoyin. Mr. Chen announces that surveying operations will be taken up at once as soon as approval has been obtained and share bonds will be issued at the same time.

Auto Road Project in Chekiang.—An automobile transportation scheme on a large scale is being promoted by the new Governor of Chekiang, Mr. Chi Yao-shan. His plan is to construct roads for motor-busses to penetrate all the towns of the province. The whole road system will be completed in 15 years, and the total cost will be $60,000,000 Mexican. One-fifteenth of the total capital will be raised every year. The provincial Government will appropriate $160,000 per annum for the purpose, while the district cities will be asked to contribute $1,000 each. The province is divided into four districts, and it is intended to complete the roads of each district in three years and five months. During the first period, the roads from Tunglu to Lanchi will be completed. When 60 li (20 miles) of the road are built, motor-busses will begin to operate. Each bus is to have the capacity of carrying 20 passengers. The fare will be 2 cents Mex. per li. It is estimated that when the road system is completed, sixty motor-busses will be operated and the annual profits will be approximately $1,000,000. The plan has been sanctioned by the Ministry of the Interior, and the Governor of Chekiang has appointed Mr. Wu Tzu-yin as director of the motor road Bureau to carry out the project.

Chefoo-Weihsien Railway.—At the initiative of the Chinese Guild, Chefoo, the long pending question of constructing a railway between Chefoo and Weihsien is reported to have been brought to a head. The construction work will be undertaken by the Chinese and is to be begun on May 1st. According to the Chinese press, the estimate submitted to the Peking Government for sanction by the promoters was $10,000,000, which amount has been increased by the Communications Office by $6,000,000.

The required funds are to be raised as under:—$3,200,000, a grant by the Communications Office, Peking. $8,000,000 to be contributed in equal shares by the eight Prefectures through which the new line will pass. $2,000,000 to be contributed by the remaining Prefectures in Shantung. $2,800,000 to be contributed by the other Provinces in China.

Japan's New Lines.—At an expenditure of 179,166,000 yen, the Japanese Railway Board is now contemplating the construction of twenty-eight new railway lines, with an aggregate length of 1,135 miles through many different parts of Japan. Among the principal lines for which construction works will soon be started are:

Between Morioka, Miyako and Yamada, 77 miles; Ikeda and Kotohira, 18 miles; Ikeda and Kanonji, 16 miles; Futsukaichi and Nagao, 15 miles; Kurume and Uyeki, 40 miles; Akita and Murakami, 124 miles; Murakami and Samukawa (seashore line), 18 miles; Murakami and Samukawa (mountain line), 19 miles; Kawanoye and Nishijyo, 25 miles; Yamada, Kochi and Susaki, 34 miles; Miyazaki and Sahaku, 88 miles; Nayori and Shimoyubetsu, 76 miles; Rumoye and Masuke, 9 miles; Katsuta and Omiya, 13 miles; Tottori and Chizu, 20 miles; Yoneko and Neame, 19 miles; Nobechi and Ominato, 38 miles; Yamagata and Sazawa, 19 miles; Onishifu and Chinai, 87 miles; Miyachi and Inukai, 36 miles; Oguchi and Awano, 12 miles; Omagari and Kadodate, 11 miles; Morioka and Hashiba, 16 miles; Yokote and Kurosawajiri, 39 miles; Kuchia and Higashikuchia, 9 miles.

Manchurian Light Rail Scheme.—There is a scheme to build a light rail line over the three Manchurian Prefectures of Kaiyuan, Hsifeng, and Hailungcheng, but as it will require a stiff outlay to complete the whole of the proposed line the two Prefectures of Kaiyuan and Hsifeng are to be attended to first. About $140,000, is said to have already been raised for the purpose, and the necessary surveys of the proposed route have been finished by an engineer. Kaiyuan-Hsifeng line extends over 40 miles. There are three small rivers to be crossed, but the country through which the line runs is level on the whole, and little difficulty will be met with in construction work. An application for permission has been filed with the Communications Office, Peking, through the hands of Mil.-Commander Chang Tso-lin, at Mukden.

Meklong Railway.—At the recent meeting of the directors of the Meklong Railway Co., Ltd., it was decided to recommend to the shareholders to pay a dividend of only 3 per cent for the year. This is due largely to the great reduction in the fish carrying traffic, receipts being less under this heading alone by about 35,000 ticals, and in addition the passenger traffic has shown a falling off from the previous year by over 10,000 ticals.

Owing to the small dividend the Directors further recommended that no fees be paid them in respect to their services during the year under review, and that the bonus usually voted to the staff be omitted this year.

Accuses Tientsin-Pukow Railway.—Japanese press reports emanating from Tsingtau, charge that in order to absorb as much freight as possible from the Shantung Railway, the Tientsin-Pukow Railway Management are offering in private a discount of more than 20 percent for groundnuts and groundnut oil, as consigned through the Chinese forwarding agents. Mr. Chou Pao-san, who keeps his head office at Tsingtau and is one of the most extensive operators on the market, is mentioned as one of those who are sending goods to Shanghai via Pukow, but no accusation that he had received rebates was made in the Japanese newspapers.

Doubling Japan's Railway Tracks.—Expenditure for doubling the tracks of the Imperial Railways during next fiscal year, April, 1917-March, 1918, is fixed at 2,563,000 yen. Details are:—Ofuna-Yokosuka line, 378,000; Kuroiso-Chiraikawa line, 568,000 yen; Abiko-Torite line, 75,000 yen; Mito-Isohara line, 426,000 yen; Shinonoi-Nagano line, 293,000 yen; Himeji-Kamigori line, 284,000 yen; Oiwake-Shimizusawa line, 249,000 yen; Oiwake-Muroran line, 100,000 yen; and Akama-Hakata line, 189,000 yen.

Revenue of Japan's Railway.—The Revenue of the Railway Board for the 11 months ended February 28 amounted to 120,878,478 yen, of which 58,101,689 yen is freightage. Compared with the corresponding period last year, the figures show an increase of 6,333,180 yen in passenger fares and 11,432,952 yen in freight over a year ago. For the 11 months passengers numbered 171,325,806 and freight amounted to 36,577,160 tons, an increase of 20,332,215 persons and 4,733,604 tons, compared with the same period last year.

FINANCE

Chicago Financiers Confer on China Loan.—Vice-President Abbott of the continental and Commercial Bank of Chicago arrived in Japan late in March to meet Mr. Joy Morton, a director of the Bank who has been making investigations in China. Mr. Morton arrived at Shimonoseki on March 29. Mr. Abbott, after his conference with Mr. Morton, visited China and the Philippines.

The Continental and Commercial National Bank has negotiated the loan of $30,000,000 to the Chinese Government, of which the first portion, $5,000,000 has already been successfully placed on the American market in Chicago. Mr. Morton is senior member of Joy Morton and Company. He is president

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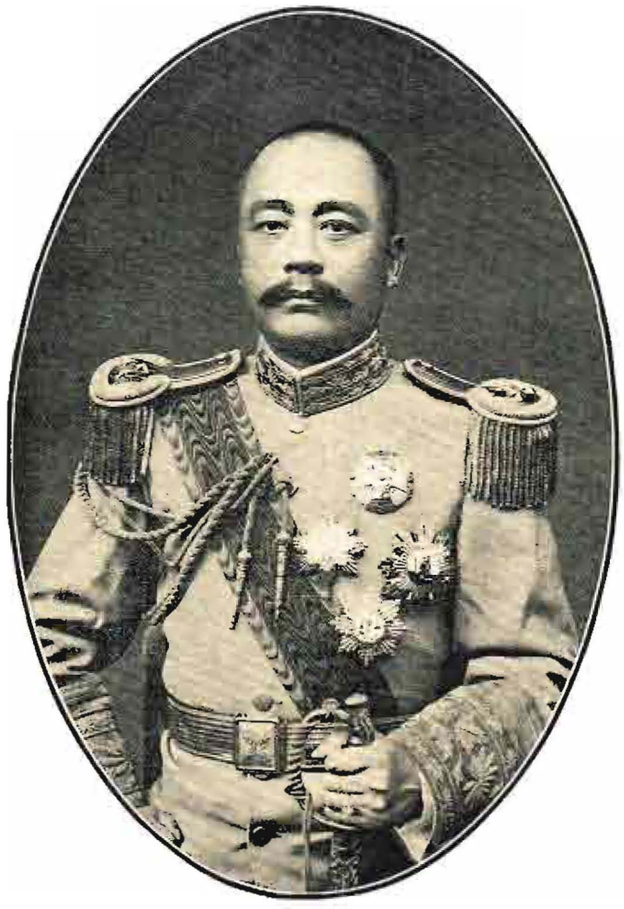

GENERAL LI CHUN
GOVERNOR OF KIANGSI PROVINCE

ROCKEFELLER FOUNDATION IN CHINA
THE OIL THAT FAILED
JAPAN AND CHINA'S TARIFF REVISION
THE PAN-ASIAN MOVEMENT
SOME QUESTIONABLE RAILWAY DEALS
BRIBERY CHARGES IN PEKING

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SOME QUESTIONABLE RAILWAY DEALS

Attacks on the Minister of Communications

The absence of any properly organized department to control purchases for the various railways in China has led to many abuses in the past and has now opened the way for charges of corruption to be levelled against the Minister of Communications, Mr. Hsu Shih-ying. Both attacks have been launched by newspapers. Curiously enough the charges are made by the only two Chinese newspapers published in English in the Capital, one charge of fraudulence and bad management in connexion with the hiring of cars being made by the *Peking Gazette*, and the other of corruption in connexion with the purchase of ten locomotives for the Tientsin-Pukow railway by the *Peking Daily News*. Both are strikingly vigorous in their treatment of the charges they father, and that they are able so boldly and so constantly to attack a Minister of the Cabinet without being suppressed indicates in no uncertain voice that the press is now securing for itself a position which newspapers have not hitherto enjoyed in China. And this should make for the ultimate good of the country, even if what they have to say may be somewhat painful and embarrassing for the Minister of Communications whose alleged actions serve for the moment "to point a moral or adorn a tale."

A Deal in Freight Cars

Under the heading "How to Rob," the *Peking Gazette* emphasised that "either Mr. Hsu Shih-ying, the Minister of Communications, or one of his hirelings" had agreed to hire from certain Japanese a number of railway cars at $4.00 (four dollars) per day, and set out to show that the rent to be paid for each car for fifteen years would be $21,900, (whereas the pre-war estimated cost for the car was some $2,600), and to this had to be added some $5,000 to cover repairs, interest, etc., during the time of rental of each car. Thus, points out the *Gazette*, the Minister makes a bargain with the Japanese to hire cars which will cost $23,000 in excess of the actual price of each car, and at the end of the fifteen years the car has to be returned to the Japanese. The paper asserts "that the time has come when an end must be put to a state of things which is a national disgrace," and urges Parliament to interpellate the Government with regard to the contract.

This attack drew a reply from the Ministry of Communications. It averred that an agreement had been made for the hire of two hundred goods vans "from a certain American company" with the approval of the Government. The Minister personally had nothing to do with the transaction, the reply stated, and it went on to make an explanation as follows, which will be of interest to all connected with the car trade, and to others generally—even those who merely take an academic interest in the methods of doing business in China:

You (Editor *Peking Gazette*) then stated that the majority of the cars are rough goods vans, the price of which is about 3 or 4,000 dollars per car. Now the vans concerned are 150 covered goods vans and 50 open vans. The pre-war price of such vans was $6,000 for the covered van and $4,000 for the open van. Owing to the rise of the price of steel the minimum price for the covered van would be $8,000 and open van, $5,000. The cost of transportation has increased several times. Roughly it will take $3,000 to bring out a covered van, and $2,500 an open van, to China. Putting the net cost and cost of transportation together each covered van will cost $12,000 and the open van, $7,500. This is the market price and not a secret.

(3) You further said that for the 15 years the rent per car would amount to $26,000, which is 7 or 8 times the cost of buying the car. Now the rent for the covered van is $4 per day, that is, $1,460 per year, and $21,900 for the 15 years. The rent for the open van is $3.70 per day, that is $1,350 per year, and for the 15 years, $20,257.50. Compared with the cost of purchase the rental only exceeds by $10,900 for the covered van, and $12.757.50 for the open van. For the former the increase is less than the cost and in the latter case only little more than the cost—this, be it noted, does not take into consideration the interest on the capital. The following tables will show the facts:—

Cars.	Number	Rent per day	Annual rent.	Rent 15 years.
Covered van	150	$4.00	$1460.00	$3,285,000.00
Open van	50	3.70	1350.50	1,012,875.00
Total	200	7.70	2,810.50	$4,297,875.00

The above figures show the cost of renting the cars. Now let us see what it will cost to purchase the same.

Cars.	Number	Price for each	Transportation.	Total cost.
Covered vans	150	$8000	$3000	$1,650,000.00
Open vans	50	5000	2500	375,000.00
Totals	200	$13,000	$5,500	$2,025,000.00

On account of the general financial stringency it is difficult to borrow money. Even if it is possible to do so, and take the latest loan of the Ministry of Finance as an example, a loan of $2,328,750 will be necessary to make the purchase, assuming the loan to be floated at 85. Now the interest for such a loan at 6 percent would amount to $139,725 per annum; and for the 15 years, $2,095,875.00—a total cost of $4,424,625.00. Now compare the following-table:—

Total rental	$4,297,875.00
Total cost to purchase	$4,424,625.00
Difference in favour of rental method ...	$126,750.00

It is thus seen that it is cheaper to rent than to buy the vans. It is true that at the end of 15 years the old vans may be sold as scrap but the money thus made will certainly not exceed the balance named above.

From the above it will be seen that the proposal of renting the cars is not a folly. But allow me to give some figures respecting the profits the cars will make. A 3-ton covered van, after deducting the capital of the railway and other expenses for its upkeep, will make an average profit of $20 per day, making a net profit of $16 after paying the $4 rent. This carrying ordinary third-class goods. As to the open vans, each will make a profit of $15 per day for carrying coal. There will be a net profit after paying the rental of $3.70, or $11.30. Each covered van will therefore make a profit of $5840.00 and the open van, $4124.50, per year; that is 150 vans will produce a total profit of $13,140,000 and the open vans, $3,093,375 for 15 years respectively. Thus for a total rental of more than four million dollars a profit of more than 16 million dollars will be made. This is certainly quite in order.

Now compare this with the hire of cars by the Hunan and Hupeh railways from the Kin Han line. In this case the rent for a 20-ton open car is $6 per day, and that of a 15-ton car, $5, yet the cars are old. The cars to be had by the Tientsin-Pukow line will be new and of 30 ton size. Calculated on the capacity basis the rentals of the Hunan and Hupeh railway cars are two or three times that of the Tientsin-Pukow railway. Again, in foreign lands there are more than ten cars for every Chinese li of line, but the total number of cars for the Tientsin-Pukow railway, which is more than 2,000 li long, is only a little more than 1,000. Compared with other railways it has less than one-twentieth the number of cars as foreign railways. Furthermore goods are piling up like mountains on the Tientsin-Pukow line. As this line is a commercial undertaking it is impossible for us to remain idle while something can be done. Looking at the matter from whatever point of view, the Ministry has taken the only course which is right and unavoidable. As to "black scenes behind the curtain," I can assure you that there is none,

absolutely none. Hope your honourable paper will give the report correction and oblige. Attached is a copy of the agreement,

*(signed) MINISTRY OF COMMUNICATIONS.

The Agreement

Agreement concluded between the Tientsin-Pukow Railway, which is under the direct control of the Ministry of Communications and hereinafter called A, on the one part,and Han Sheng Company, hereinafter called B, on the other part, for the rent of railway cars on the following conditions: The agreement is duly authorised by the Ministry of Communications.

Art. 1. Number of cars. A shall hire from B in all 200 cars, of which 150 shall be 30-ton wooden covered vans, and 50 30-ton high enclosure wooden open vans.

2. Pattern of cars. The patterns of the cars shall be supplied in drawing by B and attached hereunto with the agreements. As to couplings, height of car and width of track, they shall conform with details supplied by A.

3. Date of delivery. First delivery of cars will be made twelve months after the signing of this agreement, and the total number of cars shall be delivered within 19 months.

4. Point of delivery. The cars shall be shipped in instalments to the railway wharf of the Tientsin-Pukow railway at Chen Tang Chuang, Tientsin. A to take delivery of the same from the ship.

5. Method of delivery. Notice will be given by B to A five days before the arrival of the ship, and delivery will begin on the day of arrival of the ship. A shall not delay taking delivery of the same. If A should fail to do so upon the arrival of the ship he shall be responsible for the expenses incurred for the delay by the ship.

6. Calculation of Rental. Rental shall be calculated per car from the date on which all parts of the car have been taken delivery of by A from B off the ship after arrival at Chen Tang Chuang. No rental will be paid for any car, any part of which is found to be missing upon delivery until the missing part has been replaced.

7. Rental. The rental for the covered wooden cars will be $4 Chinese currency per car per day; and $3.70 Chinese currency per day for each open wooden van.

8. Term. The term of hire shall be 15 years for the above said cars. Neither party shall cancel the agreement within the term stated. A shall pay in one sum the rental due for the rest of the unserved term if it is desired to cancel the agreement before the stipulated date or expiry of the agreement. When it should be found that any of the cars are damaged or unfitted for carrying goods within the term of 15 years, provided that the cars are damaged as the result of legitimate use and not of other cause and when the cars are beyond repair, notice to this effect may be given by A at any time to B, for the return of the damaged car to B, in which case the rental for the car shall be stopped. If B should fail quickly to take back the damaged car after receiving notice from A, the latter shall stop payment of rental from the day the notice is given for the car or cars concerned.

9. Assembling of cars. Cars shall be taken into pieces after manufacture abroad for shipping purposes. A shall be responsible for the reassembling of the parts after their arrival at Tientsin. A shall be responsible for replacement if the number of cars be found short upon arrival.

10. Repairs. Repairs, change of parts and painting for the axles and wheels of the cars shall be done by A within the term of rental as provided in Art. 8.

11. Whenever rental is due in accordance with the stipulations of Article 6, calculated on the per car basis, the same shall be paid promptly at the end of every month upon the presentation of a receipt by B, at the office of the Tientsin-Pukow railway at Tientsin.

12. Right of Ownership. The right of ownership shall remain in the hands of B but during the term of rent as stated in Article 8 the cars shall be used for all purposes day or night for carrying goods, military supplies or troops without interference from B.

13. Upkeep. A shall have the unrestricted use of cars within the term of rent, and shall give special attention to their upkeep but within the term of rent as stated in Article 8, B shall not meddle with the same. Upon the expiry of the term A shall return to B 200 old cars. A shall be responsible for the replacement of any car, which may be found to be missing for whatever cause.

14. Expiry of Term. If it be found that the old cars are still serviceable on the expiry of the term of rent as stated in Article 8, an agreement may be mutually made on the terms of this agreement for the continuance of the hire of the cars or the old cars may be purchased by A at a suitable price, in which case negotiations shall be held between A and B.

15. Operation of Agreement. As the terms of this agreement have been approved by the Ministry of Communications, this agreement shall come into force on the day it is signed by the two parties concerned.

16. This agreement is made out in duplicate, all in Chinese, to be held one by each party. A copy each of all the documents and letters passed between the Tientsin-Pukow Railway and the Ministry of Communications in connexion with this agreement, is hereby attached to the agreements as a token of good-faith.

(Signed) On behalf of the Tientsin-Pukow Railway under the direct control of the Ministry of Communications :—

Wang Chia-chien, Director. Sheng Wen-yi, Co-Director

On Behalf of the Han Sheng Company.

Pao Tsung-hon

Witness: Chin-pan Hsiung-shiu (Japanese) Dated 6th day of the 12th month of the 5th year of the Republic of Chung Hua.

The Supplement

In connexion with the agreement for the hire of 200 railway cars concluded between the Tientsin-Pukow Railway hereinafter called A, and the Han Sheng Company, hereinafter called B, which was signed on the 6th of the 12th month of the 5th year of the Republic of Chung Hua, the following additional three articles, required by the Ministry of Communications, are hereby added with the mutual consent of the two contracting parties concerned, the said additional articles shall have the same force and effect as the terms of the original agreement.

Art. 1. Overhaul. With the exception of damages as the result of accidents, mutiny of soldiers or fire, in which case A shall be responsible, B shall be responsible for the overhaul (big repair) of the cars within five years from the date the original agreement was signed. Notice shall be given by A to B, and men shall be appointed by the two parties concerned to inspect the cars and decide whether they really need repair. With the exception of overhaul (big repair) within five years as hereinstated, all other minor repairs to be done within the 15 years of the term of the agreement shall be done in accordance with the provisions of Art. 10 of the original agreement. The time for overhaul shall be seven days, after which rent shall be collected for the car if A should fail to complete the overhaul within the said seven days.

Art. 2. Date to begin rent. After the arrival of the cars at Chen Tang Chuang and the delivery of all the parts of the cars to A, a day will be allowed for assembling each car, and rent will only be paid for the cars thus considered to have been assembled, that is, for every day passed after the delivery of the parts of the cars one more car is to be considered as having been assembled, whether actually no car or many cars have been put together, and rent paid for the same. Exception shall be made for cars whose parts are found to be missing upon delivery. Rental to be paid whether the cars are actually in use or not.

(Signed as before)

In the presence of Sung Ping Heng Hsiung, *Japanese Consul General* at Tientsin.

In dealing with this reply the *Gazette* points out that the Minister "is anxious to dissociate himself from the negotiations, and—in the authentic mandarin fashion—he attempts to thrust the responsibility for the transaction on a subordinate," but the paper challenges the Minister to deny that he and a certain official in the Board negotiated the agreement, and then proceeds with the following sweeping statements:

It is futile to disguise the fact that Mr. Hsu Shih-ying's administration of the Ministry of Communications is become a national scandal. Chinese

and foreigners alike speak of his tenure of office in terms of reprobation applied only to public men who are guilty of gross misconduct in the administration of the revenues of the state. It is the daily talk of his Yamen that every lucrative post in the gift of the Minister of Communications can be bought and that no such post is ever given unless handsomely paid for, and case after case in the Railway and other services under the control of the Ministry is mentioned as having been the subject of shameless traffic. The Directors and many of the other higher officers of every Government Railway line have been changed; and it is openly said that these changes have taken place because the old officials have failed to make the appropriate "presents" to the proper quarter and the new officials have done so. Figures are mentioned ranging from a few thousand dollars to upward of $50,000. The few honest officials in the Ministry of Communications, who have escaped summary dismissal at the hands of the Minister of Communications, say it—whisperingly—that the present in the regime of the Ministry is the worst, not excluding the classic days of the Manchus with their monumental corruption. There is hardly an official in the Capital—from the highest to the lowest—who does not know and talk of the shameful state of things; and yet nothing is done—and people, whose sole thought is to get-rich-quick in the belief that another political transformation may come, are suffered to rob and batten on the revenues of the country.

As regards the meticulous calculation which Mr. Hsu Shih-ying hat made in order to support the car-deal, we have to characterise it as no only ingeniously Mandarin but disingenuous and utterly misleading. We have flatly to contradict the statement that the pre-war price of either a covered freight-car was $8,000 or an open car was $4,000 as he alleges; nor do we admit that the war-price of a covered car is $8,000 and that of an open car is $5,000, as he also alleges. It may be that these figures are the special quotations of the precious Han Sheng Company in its dealings with Mr. Hsu Shih-ying: but it is ridiculous for the latter to state publicly that the figures mentioned are the market prices of railway freight-cars, The most effective reply to the statement is that the Ministry of Communications can purchase similar cars, manufactured at Shanghais for Taels 3,000 per car. And the further statement that the cost of freight from Japan—the cars, we take it, are to be shipped from that place—is $3,000 per covered car and $2,500 per open car, is not less false than outrageous and insulting to the intelligence of even a rickshaw coolie. But assuming that these false figures are true—to put it in the Irish way—it is clear that they are war prices; and for the purposes of Mr. Hsu Shih-ying's case, their argumentative value is obviously limited to the duration of war-conditions. If he justifies the hire-agreement on the ground that both the price and freight of each car have risen to abnormal figures on account of the war, that reason can be valid only for a hire-agreement that is operative during the continuance of war conditions. But instead of so limiting the term of the agreement or providing for its termination within a reasonable period of the conclusion of the war, Mr. Hsu Shih-ying has fixed a period of rental which, we have no hesitation in saying, is entirely unprecedented in matters of the sort. We could understand an agreement limited to as many as three years; but to enter into an agreement binding on the Chinese Authorities for a period of fifteen years on the basis of fabulous war-prices, is not only an act of "folly"—which he disclaims in his reply—but something that suggests inferences gravely reflecting on a man's probity. The rest of Mr. Hsu Shih-ying's calculation and figures are strongly reminiscent of a favourite Mandarin method of estimating the yield of a poll-tax in China or other special contribution from the nation. There are 400,000,000 Chinese: if you want $400,000,000 or $4,000,000,000, just multiply 400,000,000 either by $1. or $10. and, presto, the trick is done—whether each of the 400,000,000 Chinese is able to pay $1. or $10 or even 10 coppers is immaterial!

The Minister disdained to take any further notice of the newspaper, and other members of the Cabinet seemed reluctant to poke their finger into the pie, so there the matter will end unless some inquisitive member of Parliament rises to demand information, and can secure a following to obtain an investigation.

A Matter of Locomotives

In the meantime, however, the *Peking Daily News*, which was not to be outdone by its contemporary, started an opposition attack suggesting that the Minister is responsible for the closing of contract for the supply of ten locomotives between the Tientsin-Pukow Railway Office and a hitherto unknown firm called the Chinese-American Railway Supplies Co. This transaction is described by the *Daily News* as a "daring piece of corruption," and "from beginning to end appears to be a swindle, pure and simple." The paper declares that the Company concerned has no domicile in America, and but recently came into existence at Tientsin, "organized, most probably, for this special purpose—to cheat the Chinese Government." The paper alleges that certain railway officials are interested in the Company, and that after the signature of the contract they approached the British accountant of the Southern section of the road for the necessary funds, but he refused them—which act seems in itself completely to justify the employment of foreign accountants. Failing in this quarter "they appropriated the sum out of the funds which used to be deposited in the Deutsch-Asiatic Bank, and which are now being deposited in a Chinese bank in consequence of the rupture of diplomatic relations between the two countries. To the funds in the Chinese Bank they have easy access, inasmuch as no signature of foreign accountants is necessary." Can any stronger evidence be required of the advisability of having foreign accountants guard revenues pledged for loan services in China?

The paper claims that those interested in the Company holding the order for the ten locomotives drew from the bank some $210,000 as a first instalment, and the allegation is made that of this sum not only railway employees but the Minister himself secured participation, while "$70,000 was paid to a Mr. Rochelle, who is said to be the official representative of the Chinese-American Railway Supplies Company." Mr. Rochelle was one-time Editor of a scurrilous German-owned paper printed in English at Tientsin, and left when things grew rather warm. With regard to the contract the *Daily News* says:

"From a careful scrutiny of the contract, it becomes apparent to anyone that it could never be fulfilled by the Chinese-American Railway Supplies Company. The contract, which was concluded after negotiations lasting only three hours, as published in our issue of the 2nd instant contains many loop-holes for corruption and for evasion. When asked what locomotive company would supply the engines, the party named Rochelle replied that the head office of his company in New York would place the orders with some factory after receipt of the specifications supplied by the Railway. But we learn from railway experts that the specifications for the locomotives required for the Tientsin-Pukow Railway would make it utterly impossible for them to be supplied at the price quoted by the Chinese-American Railway Supplies Company at the present high cost of labour and material in the United States. With the frittering away of something like $140,000 for the purpose of bribing the railway officers and the head of the Ministry of Communications, the possibility for the fulfilment of the contract by the so-called Chinese-American Railway Supplies Company correspondingly diminishes. What, then, will be the upshot? The contract will simply have to be cancelled sooner or later, and there will be no accounting for the huge sum already divided among the corrupt officials involved in the discreditable transaction. We reiterate our opinion that the whole transaction is a downright swindling operation, and those who are involved in it should be tried by the Administrative Court, and, if found guilty, they should be punished severely as a warning to other officials who have been bred in a corrupt environment, and who consider "squeeze" rather in the nature of a delicate art than a crime. The whole press of China, foreign as well as Chinese, should apply the lever of public opinion with such vigour that the corrupt railway officials will eventually be compelled by sheer pressure to vacate their posts in favour of worthier men, whilst Parliament, unless it is perchance conniving with Hsu Shih-ying, as currently reported, should hold a special session and pass a resolution with a view to instituting a public investigation of this sorry transaction."

The Contract in Question

The following is a translation of the contract:

Art. 1.—The Railway Office shall furnish the Company with plans and pictures of the locomotives with notes of explanations attached, and

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CHINA'S RAILWAYS

Much ado was made in Tokyo early in April in connexion with the fifth assemblage of the conference to discuss through traffic between the railways of China and Japan. The Japanese Government took occasion by the hand further to emphasize their friendly feeling towards China. At a celebration given to the delegates to the conference the Japanese Government was represented by Baron Goto, the Minister of Communications, and the Chinese Government was represented by the Vice-Minister of Communications, Mr. Wang Fu-wei. Baron Goto pointed out that Japan was not only the natural pivotal centre for traffic communications in the Pacific, but she also held the key to travel and traffic facilities on the continent of Asia, meaning, presumably, the Japanese ownership of the South Manchuria Railway, a section of which must be traversed by anyone wishing to proceed by rail from China to Europe. Baron Goto alluded to the success which had attended the conferences in the past in providing for through tickets between Japan and China, and vice versa, and in shortening the journey in time. He urged the realization of long-cherished schemes for the through transportation of goods, and he stated that Japanese officials had already been despatched to China to talk this matter over. Likewise he intimated that it was the intention of Japan "to extend the arrangements of ordinary through tickets with the steamship companies participating in the through traffic so as to realise to the fullest extent the functions connecting the ocean routes in Asia, the South Seas, and America. Through traffic in the true sense of the word can only be attained," he said, "by a system in which co-operate the railway systems of America and China, together with Trans-Pacific steamship lines and the Japanese railways," and he emphasised that "our Empire's great mission, owing to our geographical position, is to promote the general interests of the world." Count Terauchi, the Premier, whose policy is to promote better relations between Japan and China, also seized the opportunity to drive home a few thoughts, and at a dinner given to the Chinese Vice-Minister of Communications he said:

From personal observation I am convinced that the future development of China largely depends on the services rendered by the railways which by solving several questions, political and economic, will benefit not only China but also Japan, because Japan will be able to obtain a supply of cheap raw materials and extend the markets for her manufactures. The close relations between China and Japan may be traced not only to their inhabitants being of the same race and using the same written characters but also to the fact that Japan in the past owed a great deal to China for the development of her literature, religion, fine arts and other matters. The two countries now have relations in which one supplies the other's wants with what it itself has in abundance. But those who should be most friendly often disagree and dispute on account of their being too intimate. It is regrettable that China and Japan have shared this experience but, recently, the well-educated people of both countries have come to understand well their common interests and we hear on all sides the demand for increasing amity between Japan and China. The desire to promote and maintain friendly relations must be translated into actions. Past experience shows that when mutual relations become closer disputes may arise. Intelligent observers in both countries must try to solve them with sincerity, kindness and friendship that nothing may be left to rankle on either side. Amicability should be unlimited in the relations between China and Japan.

It must be pointed out that the Through Traffic Conferences so far held have been responsible for noteworthy improvements in the train services between Japan and China, that is so far as connexions, fares, and schedules are concerned, but much has been left for China to do to bring her equipment up to first-class standards to match with the splendid service of the Chosen and South Manchuria railways. Here the Japanese have undoubtedly excelled, and travellers are willing to admit quite freely that no better train accommodation can be secured anywhere else in the world. This is a very high tribute to the powers of organization, and the understanding of modern requirements, possessed by the Japanese. But what do the travellers say when they transfer at Mukden from the luxuriously appointed cars of the Japanese lines to those of the Chinese railways? Echo answers, what! There is no comparison between the two. One is magnificently modern—the other is outrageously out-of-date, nor does it have the saving grace of comfort or cleanliness. All that can be said of the Chinese trains, when considering them as part of a great continental system, is that they are better than

nothing. But it is nearly time that the Chinese authorities awakened to the fact that if the returns earned by a railway were judiciously expended on the upkeep of the line and its equipment they easily could replace the present rolling stock with up-to-date types. The blame for the conditions which a long-suffering public has had to put up with does not rest upon the shoulders of the Europeans connected with the Peking-Mukden line, as many travellers suppose. The European officers on the line have not the power to effect any radical alterations. They have made suggestions for reforms times out of number, but as they have no control over finances they are deprived of any initiative in meeting the demands and needs of the time. They know what is required just as much as, if not better than, the disgruntled traveller, and their lot is made a decidedly unhappy one by the limitations that are placed upon them by the officials in charge of the Ministry of Communications. Given a free hand for half a year and the Peking-Mukden section of the trans-Siberian system would equal any other section, and in justice to themselves and their country the Chinese officials responsible should accord the necessary liberty to those who can plan for the management and operation of the railway on a basis which make for efficiency and satisfaction to the travelling public.

When Count Terauchi says that the future development of China largely depends on the services rendered by the railways he states what is merely an obvious truth to all but the Chinese. As has been pointed out in this journal on several occasions the Chinese fall short when they attempt to control modern methods of transportation or industrial development. For some reason or other they have not the faculty for it. This is demonstrated by a glance at their steamship services, their train services, and the bones of many industries bleaching in various parts of China. No country in the world is so equipped with population as China; no country can boast such widespread, constant and unmurmuring human industry. Almost every arable acre with or without a semblance of transportation facilities can boast a tiller. The great plains to the east of the mountains, and any great areas beyond the mountains, are all under intense cultivation, and yet for transportation of products there is not one decent road and only the railways which have been practically forced upon the government, and the silted canals which men with foresight of the centuries ago constructed. The modern Chinese officials have scarcely yet begun to understand what tremendous advantages are possessed by railways, though the change of feeling among the peasants in the country is now most marked. Once they would not permit a surveyor to erect his theodolite—they hunted him with clods or guns. When a line was built in spite of them they would not think of allowing it to approach a town or city for fear that the spirits would be disturbed, but the lessons of recent years have been learnt and surveyors who now traverse the country find themselves welcomed everywhere. The ideas of the country people about the fiery monster of a locomotive have been completely revised. They realise that it breaks down their isolation, brings their crops to market, and finds for them profitable outlet for their toil. Engineers recently travelling through Kwangsi Province were eagerly welcomed by the virtually isolated people. One elder almost tearfully urged the engineers please to build a line, remarking with almost tragic pathos that he had in his time seen many railway engineers but never a railway!

It must be admitted, of course, that certain Ministers of Communications have awakened to the necessity for lines, and several projected railroads have been contracted for, but apart from this no system of construction has been introduced, no railway policy has been adopted, and the whole business is one of haphazard happening. The great trouble is that the Ministry of Communications, like every other Ministry in the Chinese Government, is the sport of politics. No wisdom is shown in seeing to it that only skilled and competent men are given the direction of affairs, no foreign advice is taken, except in connexion with the reorganization of the accounting system, and no foreign advice is wanted. The greatest investment the country has made so far in reproductive directions is in railways, and yet no considered step is taken to see to it that those investments are made to earn what they can and pay what they should. It is for this reason that the services to-day are as inefficient as they are, and until some men with sense and strength of character and knowledge of conditions are installed in positions where they can effect reorganizations no improvement can be expected. It is a great pity, but it is a fact that all criticism falls upon ears that are deaf because they will not hear, or because they are too busy to attend to matters of national import while affairs of personal profit may be looked after. It is because there is no organization that the scandals recently aired are possible, and for every piece of corruption exposed there is a mass that is never heard of publicly. It is with the hope that the light will some day penetrate the dark places that we persist in pointing out the maladministration which exists, and we may hope, too, that perhaps continuous conferences such as the one recently held in Japan will do much to awaken the dormant officials of Peking to realise that after all affairs which affect the travelling public are international rather than parochial, and call for different treatment than they now receive. But hope is a delusive phantom—in China.

THE KICK AGAINST TARIFF REVISION

When the Allied Powers were called upon early in March to consider the conditions, or requests, presented by China preliminary to the latter's declaration of war upon Germany, it at once became apparent to the whole commercial world that the most interesting and that upon which most discussion was likely to turn was the revision of the Customs tariff. China's regulation of her own import and export tariffs upon foreign merchandise is seriously circumscribed by treaty and it is only with the consent of a whole concert of Treaty Powers that she can make any changes in rates or the means of levying them. This condition of affairs is primarily due to the fact that the Customs revenues are pledged to cover the payments upon the Boxer indemnities to various countries and are therefore under foreign supervision.

In the protocol of 1901, signed by China and the Powers interested in the readjustments which followed the Boxer trouble, the Customs tariffs were fixed at five per cent ad valorem, and the values upon the basis of which these charges were made, were computed from the figures of the years 1897, 1898, and 1899. In the Mackay Treaty of 1902 between Great Britain and China in which provision was made for the abolition of likin, or internal transit tax, and for an additional duty upon foreign imports to cover the losses to the Chinese Government through the abolition of the *likin*, the same values of the latter years of the 19th century were made the basis of computation and they have remained the same without revision these 15 years. But values have changed, the market prices of imported commodities have on the average gone up several per cent in the past 15 years and the Chinese Government is still deriving revenue from its Customs at the rate of five per cent on imports at the valuation put upon them in the post-Boxer era. This arrangement is palpably unjust but it cannot be changed without the unanimous agreement of all the Treaty Powers concerned and China has found it peculiarly difficult to bring them all into line.

On two previous occasions the foreign powers have been approached about a revision and on each occasion a tentative willingness to a readjustment of the tariffs was expressed by every power interested with the single exception of Japan. China being the only loser by this obstructionism of her near neighbor, she was not enthusiastically championed by any one but her own people, and the Japanese objections were permitted to stand as permanent vetoes of the readjustment movement. Now, however, when the majority of the Treaty Powers are more or less vitally interested in seeing China join the Entente, and when the Chinese have made their participation in the war in part conditional upon the revision of their customs duties so that they may be brought up to an effective 5 per cent ad valorem tax upon all imports, the chronic Japanese opposition to the reform takes on a new character, and the Japanese government, coerced by the influence of its industrial leaders, either has to

the latter shall supply the former with locomotives from the American Factory accordingly.

Art. 2.—The price of each locomotive shall be $37,669, in American currency, hence the total price of ten locomotives shall be $376,600.

Art. 3.—Six or eight months after the signing of the contract these ten locomotives shall be shipped to the Nanking-Pukow Railway jetty, and the Office shall be notified before their arrival so that officials may be appointed to take delivery of same.

Art. 4.—The total amount of the proceeds of these ten locomotives shall be paid in three instalments, as follows:

(*a*) When the contract is signed the Office shall pay to the Company an amount of $125,533 in American currency.

(*b*) When the Office is informed by the Company of the exportation of the locomotives from America, the second amount of $125,533 in American currency shall be paid.

(*c*) When the locomotives reach the above-mentioned jetty and when the officials have examined the same with all their accessories, an amount of $100,427 in American currency, being four-fifths of the third instalment, shall be paid, and when they are fully delivered over to the office, the remaining one-fifth of the instalment, $25,107 in American currency, shall be paid.

Art. 5.—The amount in each instalment shall be paid to the bank chosen by the Company, but the bank shall be in this country.

Art. 6.—With the exception of the expenses of package when these locomotives are sent out of the factory, which are to be defrayed by the Company, the Office shall meet all expenses in connexion with transportation, insurance, import duty, etc. But before the payment of these expenses, the Company shall send all bills and documents in support of the same for investigation and scrutiny.

Art. 7.—In case the Office fails to meet the whole or part of the payments in time, it shall pay to the Company an interest of 8% per annum for the debt.

Art. 8.—In case the Company fails to deliver the whole or part of the goods after the period of eight months, for each week one per cent of the price of each locomotive shall be forfeited. The proceeds of the fines shall be deducted from the payment of the third instalment. But the above does not apply to the case of physical disasters, wars, strikes and other affairs which are not within the power of the Company and the Factory to avoid.

Art. 9.—Two copies of this contract shall be written in English and two copies in Chinese, to be kept respectively by the two parties; and plans and pictures with explanatory notes shall be attached to the same.

Art. 10.—After receipt of the sanction of the Ministry, and being signed and sealed by both parties, this contract shall come into force.

Reply of American Consul

The following is a translation of the reply from the American Consul at Tientsin to a note from the Office of the Tientsin-Pukow Railway inquiring whether the above contract has been registered by the Chinese-American Consulate at Tientsin.

"I beg to acknowledge receipt of your letter inquiring whether the contract signed by your Office and the Sino-American Railway Supplies Company together with the attached plans and explanatory notes for purchase of ten locomotives, has been registered in our Consulate, etc. In reply I beg to state that the said contract was registered in this Consulate on the 7th instant (March.)"

"This letter," says the *Daily News*, "has been considered by the Tientsin Railway Office as a document standing for the security of the whole deal."

FRENCH OPPOSE AMERICAN RAILWAY

It is paradoxical, but it is a fact, that while America is talking of presenting the French Government with the splendid sum of $100,000,000 as a free gift to assist France in her fight in the cause of liberty, the French Minister in Peking, presumably acting upon instructions from his home Government, has seen fit to protest against the American railway contractors, the Siems-Carey Railway and Canal Company, proceeding with the survey and construction of the projected railway through Kwangsi Province. The railway was granted to the American firm when their contract was signed last year, and believing it free from any international entanglements it was the first selected for reconnaissance. Though it was known to the public at the time of signature of the agreement that the line had been allotted the Americans for construction no word of objection was raised by the French Government until the surveying parties had been, at great expense and trouble, put into the field. And then the protest came as a great surprise, based as it was on a secret document in the shape of a letter signed September 26, 1914, by Mr. Sun Pao-chi, the then Minister of Foreign Affairs, giving the French a blanket option for the first call in case foreign capital should be invited by China for railway construction or mining development in the Province of Kwangsi. Not only was the production of the letter a surprise to foreigners, but it also non-plussed the Chinese. The Minister of Communications did not know of its existence and the Ministry of Foreign Affairs had apparently overlooked it. As a fact the official who signed it, Mr. Sun Pao-chi, professed ignorance of it when first questioned about it. He could not remember signing such a document. The French Minister was, however, able to produce the paper, and, despite the fact that France has no money to build railways, and can have none for that purpose for many years to come, coupled with the additional fact that the very letter is contrary to the spirit of the declarations of the "Open Door," he was instructed to use it to block legitimate enterprise in China, and, it would appear, to prevent the representatives of the very country which is now doing so much for France from carrying out their enterprise. It is to be hoped that the French Government will lose no time in removing the impression that it is pursuing a dog-in-the-manger policy with one of its best, its most generous and most valuable friends. Without any further comment we reproduce the document upon which the French Government bases its claim to the right to hold the American surveyors out of Kwangsi. It is as follows:

> "Since there has been disorder on the border of Yunnan and Kwangsi, which has led to misunderstandings, both sides have appointed deputies to investigate and make arrangements for the pacification of the locality. Several replies have been sent to Your Excellency, in response to your requests for action to be taken, which we trust have been satisfactory. **Now our Government wishes to show in an especial way its friendly intentions. In future if railway or mining enterprises are to be undertaken in the province of Kwangsi, in which foreign capital is required, an offer will first be made to French capitalists.** At such a time the higher officials of Kwangsi will ascertain the facts and carry on negotiations with the French Minister. A report will then be made to the Government, which will make a final decision.
>
> "With compliments, etc."

It is by such letters as these that thoughtless Chinese "statesmen" when in office contrive to lock up their country against proper development, and curtail liberty of action on the part of their successors.

"The war is not likely to stop during this winter. If it does not, we may fairly well count on its continuance through spring and summer, because the winter is the most difficult time for the conduct of the war. In the coming winter we may hear more talk of peace, but it is reasonable to expect the continuance of the war for another year or two.

Japan Must Be Prepared

"It is necessary that Japan should make due preparations for peace during the war. Now is the time for Japan to find the points in which she must have a voice, and drive the nails, so to speak, to make her position secure. The last Cabinet made a miserable failure in its foreign diplomacy. In joining the Agreement of London Japan should have made her position clear in regard to the South Sea Islands and Kiauchau. That she has not done this is a great piece of neglect, which has involved Japan in diplomatic embarrassments. There are of course some ways even now to mend this past neglect, but it is a question whether the present Cabinet is capable of attending to such business. For instance, the Government has made mistakes in its method of utilizing the specie reserve which has increased on account of the war prosperity. Speaking of the individual, he must be a very rich man indeed who affords to live on the interest of his bank deposits; a man of ordinary means should do his best to turn his money to the best use. So it should be in the case of nations. That Japan has had her specie increased a little is no reason why she should make haste to get rid of her cash by responding to Russian and English calls for loans. That the Government should have made no effort to put the surplus money to better use than that of buying foreign loans, is proof that the Government has no definite financial policy. Such a Cabinet is altogether too weak to grapple with the momentous situation that Japan is now placed in. That is why we have come into collision with the Terauchi Cabinet.

Must Have Power on Sea

"To guarantee the safety of Japan for the future it is important that she should secure her rights on the sea. **In this connection it must be said that the Japanese occupation of the South Sea Islands is a question of life and death importance to Japan.**

"Japan's sea power to-day is far inferior to that of **her hypothetical enemy**. This is not to be helped, perhaps, because there is such a vast difference in the respective powers of wealth. But the question assumes a serious aspect when Japan loses the advantage of the sea power. The defence of the state demands three conditions, that is, (1) munitions, (2) man power, (3) strategic situation. If Japan is too poor to fulfil the three conditions, she can to some extent economize in her arms and munitions; and even in paucity of man power there is not much cause to worry, because good training will make up to some extent for this defect. As long as Japan occupies a favorable strategical position, she will be safe. **Therefore the 100,000 square miles of the territorial waters in the South Seas which are now in Japanese occupation are of great value to Japan, affording as they do, a series of excellent naval bases on which Japan may establish the peace of East Asia. If Japan were to lose these naval bases, she would at once be placed in a perilous condition, even in peace time.** In time of war Japan would be in positive danger. The Okuma Cabinet has done nothing to strengthen her position in this respect. Such an omission is not only a grave diplomatic failure, but a veritable political crime, when you consider the serious far-reaching consequences which it involves. I am not opposed to the declaration of war against Germany, as were the Seiyukai. I approve of war with Germany, because Germany richly deserved Japan's enmity for her "triple interference," the bitter fruit of which Japan was made to eat after the Sino-Japan war. But the Okuma Cabinet was wrong in the manner in which it carried out the war. The Okuma Cabinet had at that time lost its popularity with the people, and in its hurry to regain favor, rushed thoughtlessly into the war, hoping that the war might turn public attention from its maladministration. This was the fundamental cause of the Okuma Cabinet's deplorable blunders in its foreign diplomacy.

Japan's Relation with Her Ally

"When Japan had decided on a war with Germany, and the army and navy were ready for action she was told to 'wait a minute' by her Ally. There was nothing to do but wait. Japan was to obey every order from her Ally. Then the sphere of our naval operations was limited to the vicinity of Hongkong. The region prescribed was a sheer waste space,—where there was no fruit to reap after the operations. Besides the Government was made to affix the condition that Kiauchau should be restored to China after the war!

"Just at this time German men-of-war were at large, working havoc to mercantile marine, and as Britain was transporting Australian troops to the front, she enlarged the sphere of Japan's naval actions, making Japan act as guard for the British transports. A more humiliating diplomatic policy cannot be imagined!

"At the time of the declaration of war I said: 'We have no ambition to try to change the map of the world, but we must at least utilize this opportunity, so as to secure the peace of the Orient'. But the Okuma Cabinet was too foolish to accomplish anything that is of permanent value to Japan. On the contrary, grave blunders were committed, such as imperil the very existence of the state.

Criticizes Defence Policy

Criticizing the Okuma Cabinet's defence policy, Mr. Inukai says:

"When the two division problem came up for discussion some time ago, I urged the necessity of improving the instruments of war and the 'all men soldiers' policy. But Marquis Okuma rejected my proposal and adopted the so called 'professional' views of the then War Minister. Subsequently, however, Lieutenant General Kusunose, War Minister, and Lieutenant General Tanaka expressed themselves as favoring my opinion. The progress of the European war proved the truth of my assertion. The Mitsueda and the Imperial arsenals are quite inadequate to produce all the arms necessary for the defence of the country in time of war. Heavy artillery is wanting. Military motor cars are too few. Of aeroplanes there is hardly enough to be of war time service. In the materials for trench fighting, Japan is not prepared at all. Under such circumstances it is impossible to think of opening war on the continent. To speak about the dispatch of Japanese troops to the European stage of war is folly and madness. Look at the fate of Rumania, which was crushed under German arms not so much because of the weakness of her soldiers as because of her lack of tools of war!

"It is necessary that the manufacture of munitions should be made a private enterprise instead of a Government monopoly. **If this is not possible a great military arsenal should be established in China with Sino-Japanese co-operation.** Such important questions must be studied and solved before the war ends; so that Japan may be ready when the after-war competition of the world commences. The last Cabinet was criminally negligent of these important problems, and richly deserved the fate it met."

MINISTER HSU SHIH-YING UNDER ARREST

In connexion with the questionable railway deals referred to elsewhere in this issue, the Minister of Communications was arrested on May 4th, his resignation having been accepted May 3rd. Later he was ordered released on bail. The Vice-Minister of Communications and others alleged to be involved in the case have not yet been arrested.

NEW JAPANESE RAILWAY IN MANCHURIA

The Ssupingkai-Chengchiatun Line under Construction

With the advent of spring building work was begun on the railway from Ssupingkai (or Shihpingkai) to Chengchiatun, in Manchuria, one of the lines granted to Japan for construction under an arrangement made with the Chinese Government in October, 1913.

The required loan—the agreement for which is published herewith—was floated in Japan, and by June, 1916, some Yen 100,000 had been advanced for survey purposes. Mr. Fujine, of the South Manchuria Railway, was appointed Chief Engineer, and Mr. Wu-wu was made Director-General. The survey was completed by December, 1916. Owing to the present high cost of materials the line is to be built as economically as possible, wooden bridges to be erected temporarily, and to be replaced later when the price of steel declines to the normal.

By the end of this year it is hoped that the road will be open to Sankiangkow from Ssupingkai and by August, 1918, that it will be completely finished. It is expected that the cost will work out at $120,000 per mile "in view of the difficulties of the ground over which the railway will run."

Ssupingkai is surrounded by fertile plains and constitutes a large distributing centre for Inner Mongolia. Chengchiatun (or Liaoyuan), situated some 65 miles north-west of Ssupingkai, is an important market, and has a population of about 35,000. It is on the right bank of the Liao-ho River, which stream has been used by the population for the conveyance of produce to Yingkow (Newchwang). The new line is designed to divert freight to the South Manchuria Railway, though the chances of obtaining anything like a bulk of the trade is regarded by the Japanese Consul at Changchun as "quite slim." He explains this opinion by pointing out that trade relations between the people of the Chengchiatun district and the merchants of Yingkow have been long established, and in addition that port affords financial facilities not obtainable in Ssupingkai. Imports, on the other hand, mostly come by way of Ssupingkai into this region, owing to the high cost of upstream junk traffic, and with the opening of a railway will no doubt go by rail as far as possible.

AGREEMENT FOR THE BUILDING OF THE SSUPINGKAI-CHENGCHIATUN RAILWAY

(*Translation of the Chinese Text*)

This Agreement is made at Peking on the 20th day of December, 1915, (4th year of the Republic, according to the Chinese chronology, and 4th year of Taisho, according to the Japanese chronology).

The Chinese Government (hereinafter called the Government), represented by the Minister of Finance and the Minister of Communications, of the one part, and the Yokohama Specie Bank (hereinafter called the Bank), of the other part, have concluded between themselves the present Agreement on the basis of the agreement in principle which was arranged between the Chinese and Japanese Governments on October 5th, 1913 (2nd year of the Republic, according to the Chinese chronology, and 2nd year of Taisho, Japanese chronology).

Article 1.—The Government authorizes the Bank to issue a 5% Gold Loan in the sum of 5,000,000 Yen. The Loan will bear the date of the day of issue, and will be known as the Chinese Government 5% Loan for the Building of the Ssupingkai—Chengchiatun Railway.

Article 2.—The present Loan is for the building of a railway from Ssupingkai to Chengchiatun. After the completion of a survey, the route will be fixed by the Director-General of the road and the Bank, and submitted to the Ministry of Communications for approval.

Article 3.—The capital obtained from the loan above mentioned is set apart exclusively for the building of the road, including the payment for the expropriation of land, acquiring rolling-stock, and other necessary equipment (or materials), and also expenses for the operation of the road and for the payment of interest on the present loan during the period of construction of the said road.

The work must be started not later than six months after the signing of this Agreement, and must be finished if possible within two years of the day of starting the same. Before the end of six months the Bank will place at the disposition of the Director-General of the road a sum not to exceed 200,000 Yen as an advance upon the Loan, which money will be deposited in Japan or remitted to China in accordance with the instructions of the Director-General. The sum so advanced, together with the interest which will be charged on the account at a rate not over 7% per annum, will be withheld by the Bank from the proceeds of the first bonds issued. The advance will be paid in Shanghai Taels.

Article 4.—The interest on the present Loan will be calculated at the rate of 5% per annum on the nominal value of the bonds from the day of issue of the Loan, and the payment of interest to the bondholders will be made semi-annually. During the period of the building of the road, the Government will pay the interest either from the principal of the Loan or from other sources, at its discretion, and when the building is finished the interest will be paid first from the revenue of the road and thereafter from other State revenues at the discretion of the Government. Interest, which as above stated will be computed from the day the Loan is issued, will be payable 14 days in advance of the expiration of each half-yearly term in accordance with the amortization table annexed to the Agreement.

Article 5.—The term of the loan shall be forty years. The amortization of the principal shall begin from the 11th year from the day of issuing the Loan, and shall be carried out by means of half-yearly instalments, 14 days in advance, in accordance with the amortization table (except in the case anticipated in the 6th Article of the Agreement), and will be paid from earnings of the road or from other Government revenues at the discretion of the Government.

Article 6.—The Government reserves to itself the right, upon notice to the Bank in writing six months in advance, beginning with the 11th year after the issue of the Loan, to pay off, if it desires, before maturity, all or part of the principal which has not been amortized, upon condition that the holders of the bonds are to be paid a premium at the rate of 2½% above the par value of the bonds i.e., upon each bond of 100 Yen will be paid 102 Yen 50 Sen. At the end of the 20th year after the day of issue of the Loan, the Government may increase the amounts of the amortization payments, without paying a premium over and above the par value. Such payments before maturity will be carried out by means of a supplementary drawing of bonds upon the days fixed in the prospectus of the Loan for the usual drawings.

Article 7.—The Government binds itself to make the payments of the interest and principal of this Loan, in accordance with Articles 4 and 5 of this Agreement, to the Bank through the Director-General, according to the attached amortization table, but 14 days in advance. For payments to be made before maturity in accordance with Article 6, the Government likewise engages to make the required payments 14 days in advance. All of the above-mentioned payments are to be made by the Government to the Bank at Shanghai, in Shanghai Taels (or in new Government money, if such has been introduced into circulation) at the current rate of Japanese exchange. The rate of exchange will be arranged by agreement with the Bank either on the day of payment or, as the Government may prefer, on any day not more than six months previous to the day of payment. The Government shall have the right to make such payments in gold if they have such funds in Japan (upon condition, however, that those gold funds shall not have been acquired especially for the purpose of making this payment), and such payment in gold must also be made 14 days in advance. For its services in making the payments upon the present Loan the Bank will receive a commission at the rate of ¼% on all payments effected through it.

Article 8.—The Government guarantees the regular payment both of the interest and of the principal. In case the amount of the Loan or the revenue from the road shall not be sufficient for the above-mentioned payments, the Government will adopt the necessary measures to ensure these payments from other sources, which payments must also be effected 14 days in advance of the stated term.

Article 9.—The present Loan is secured upon all movable and immovable property belonging to the Railway, or which may belong to it in the future, and also upon the revenues of the

road. In case a supplementary loan is concluded according to clause 1 of Article 15 of this Agreement, the said property and revenues of the road will also serve as security for such supplementary loan. The security of this loan may not be pledged for any loan other than as above stated.

Article 10.—The Bank has the right to issue bonds for the full amount of the Loan, and the nominal value of the bonds will be determined by the Bank. The form of the bonds will be determined by the Bank in agreement with the Minister of Communications or with the Chinese Minister at Tokyo. The bonds shall be printed in the Chinese and Japanese languages, and the signature of the Minister and the seal of the Ministry of Communications shall be engraved thereon. Previous to the issue of the bonds, the signature and the seal of the Chinese Minister at Tokyo shall be engraved on each as proof that the issue has been effected with the permission of the Government and under its responsibility. The bonds will also be signed by the representative of the Bank. If bonds are lost, damaged, or stolen, the Bank will immediately notify the Minister of Communications or the Chinese Minister in Japan, who shall authorize it to advertise in the press that payments upon the same will not be made, and also to take the necessary measures in conformity with the laws of the said country. If the lost bonds are not discovered before the date fixed by the Bank, the Minister of Communications or the Chinese Minister at Tokyo will deliver to the Bank duplicate bonds with the proper signatures and seals, and all expenses for printing these bonds will be borne by the Bank.

Article 11.—During the whole currency of the Loan, the bonds and coupons, and also all operations connected with the payment of the principal and interest, will be exempted from Chinese taxation.

Article 12.—All details in regard to the publication of the prospectus of the Loan and the payment of the principal and interest, not set forth in this Agreement, shall be determined by the Bank upon agreement with the Chinese Minister at Tokyo. The Bank is authorized to issue the prospectus within the shortest possible time after the signing of this Agreement (observing the reservation in Article 13 of this Agreement). The Chinese Minister at Tokyo shall be instructed to sign the prospectus of the Loan and also to co-operate with the Bank in all questions touching on the issue of the Loan.

Article 13.—The Bank shall have the right to issue the entire Loan either at one time or in several series, depending upon the cost of the work, and its satisfactory execution, and also upon the condition of the money market. The Government shall receive for the bonds the issue price less a deduction of 5½% of their nominal value, which will be retained by the Bank as indemnification for the expense of issuing the Loan.

Article 14.—The proceeds of the Loan shall be deposited to the credit of the Railway in the Yokohama Branch of the Bank, at the times indicated in the prospectus of the Loan for the subscribers to the same.

The Yokohama Branch of the Bank will pay upon the credit balance of these funds interest at the rate of 3% per annum, and on sums transferred to China the local branches will pay the interest that is customary on such accounts. The Bank will retain, at the disposal of the Director-General, all sums realized from the sale of the bonds, with the interest thereon, deducting however, the sums necessary for the payment of interest upon this Loan and commissions u on such payments during the period of construction of the road. In the case of payments exceeding 200,000 Yen, the Director-General must advise the Bank 10 days before effecting the payment. The entire Loan is to be expended for the building of the Railway in proportion to the progress of the work and as need may arise, for which written requisitions must be presented to the Bank, signed by the Director-General and the Chief Accountant, with a statement attached, showing in detail the object of the disbursement, and specifying the cost. Every month the appropriations for the building of the Railway will be remitted to Shanghai according to the instructions of the Director-General, and will be placed to the credit of the account of the road in the said branch of the Bank. The Director-General, in agreement with the Bank, will appoint a Japanese subject as Chief Accountant. The Chief Accountant will prepare a list of the necessary Chinese and Japanese clerks for conducting the book-keeping department, and present the same to the Director-General; upon his approval of the list, and upon the appointment by him of these persons, they shall be placed at the disposition of the Chief Accountant, for the performance of their duties under his direction. The Chief Accountant, under the supervision of the Director-General and the Managing Director of the road, shall have charge of all revenues and expenditures of the road during the whole term of this Loan, and shall sign conjointly with the Managing Director of the road all documents relating to the expenditure of such sums. The accounts of the road will be kept in the Chinese and Japanese languages, according to the methods adopted for the other Chinese Railways.

The management of the road will periodically publish, in the Chinese and Japanese languages, a statement showing the revenue and expenditure of the Railway, for the information of the public.

Article 15.—In case the principal obtained from the floating of the present Loan, together with accrued interest, is not sufficient, after deduction of the percentage necessary for the payment of the coupons, during the period of construction, for the completion of the road and for meeting the expenses connected with it, the Government must furnish, from Chinese sources, the necessary funds for the uninterrupted continuation of the work, but in case a sufficient amount is not available, the Bank may issue a supplementary loan on the same terms as the Loan provided for in this Agreement. If upon the completion of the building of the road a surplus remains, such surplus money will be carried as reserve capital, in conformity with Article 18, as security for the regular payment of the principal of the present Loan.

Article 16.—The building of the road and the management of the road will be entirely in the hands of the Government.

The Government will appoint the Director-General of the road, whose place of residence must be near the place where the road is being built, and who will be furnished with full power to act in the name of the Government within the limits of this Agreement. The Director-General, upon agreement with the Bank, will appoint as Chief Engineer, under contract, a Japanese subject. It will be the duty of the Chief Engineer, under the supervision of the Director-General and the Managing Director of the road, to make surveys, prepare plans, drawings, estimates, etc., to direct the technical part of the work, to purchase needed materials, rolling stock, etc. The Chief Engineer will submit for the consideration of the Director-General a list of the necessary Chinese and Japanese technical staff for the construction work, exactly designating their number and their functions. The Director-General, upon approving this list, will appoint those technicians and place them at the disposition of the Chief Engineer for the performance of their duties under his direction. Appointments to the minor positions, and also dismissals, will be made by the Chief Engineer with the consent of the Director-General and Managing Director of the road. As the construction of the separate sections of the road is completed, they will be turned over, by the Chief Engineer, to the Director-General, who will open them for operation if this is considered advisable. The Traffic Manager shall be a Japanese subject, and he shall discharge his duties in compliance with the instructions of the Director-General and the Managing Director of the road. The duties of the chief Engineer will cease upon the completion of the building of the road. The Director-General shall then appoint a Japanese Engineer whose duty it will be to supervise the engineering department under the orders of the Director-General and the Managing Director of the Road. The Japanese Engineer and Traffic Manager will be appointed, under contract, by the Director-General, upon agreement with the Bank.

Article 17.—For the purpose of guarding the Railway line, there shall be maintained a Chinese Guard detachment under the Command of Chinese officers. All expenses connected with the maintenance of the Detachment shall be paid from the amount destined for the building and maintenance of the road. The numerical strength of the detachment shall be determined by the Director-General upon agreement with the Bank. If the detachment proves to be insufficient, the management of the road shall request the government to send as guards a detachment of troops of either the Central or Provincial Government, and the expense for their maintenance shall be borne by the corresponding authorities.

Article 18.—The income of the Railway shall be deposited in the Bank on either short or long term deposits, and the Bank shall pay interest at rates arranged by mutual agreement between it and the Government. The expenses of operation and upkeep of the road will be paid from the revenue of the road; the net balance of the revenue will first be applied towards the payment of the principal and interest on the Loan, in accordance with the annexed amortization table, and the surplus remaining after the above-mentioned payments shall be held at the free disposal of the Director-General.

After the completion of the building of the line and its opening to traffic, the amounts designated for the payment of principal and interest on the Loan shall be handed over to the Bank six months in advance of the dates specified in the amortization table. In case the revenue of the road is insufficient to cover the expenses for the payment of interest on the Loan and the liquidation of the principal, these payments shall be secured by the means indicated in Article 8 of the present Agreement.

Article 19.—During the period of the building of the road, a person designated by the Bank shall act as the agent of the road for the purchase abroad of all necessary building materials, rolling-stock and other articles. The more important of these purchases will be made by the Director-General by means of tenders. It will be the duty of the agent, who will act as middleman, to furnish the required materials on the terms most advantageous to the road, and as compensation for this service he shall retain for himself 5% of the net cost of materials procured in this way from abroad. All supply contracts shall be made through the Chief Engineer with the approval of the Director-General. It shall be the duty of the agent, who will be responsible for the strictest inspection of the materials obtained, to select materials of the best quality; the management of the road has the right to refuse to accept materials if they are not in accordance with the specification previously adopted. Building materials, rolling-stock, and other articles of Japanese origin will be given preference before merchandise of other origin if the Japanese merchandise is of the same quality and the same price; after Japanese materials, preference shall be given to foreign merchandise recommended by the agent. Original bills for purchases of materials, and customs certificates, must be presented to the Director-General; in case discounts are allowed from the established prices, these amounts must be credited to the account of the Railway; the agent is required to present all vouchers, certificates of manufacturers, etc., required by the management of the road.

Aside from the above-mentioned commission the Bank shall not retain for its own profit

THE FAR EASTERN REVIEW

COMMERCE :-: ENGINEERING :-: FINANCE

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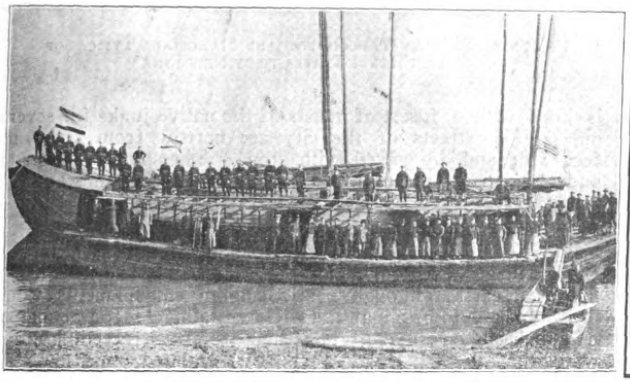


SIEMS-CAREY ENGINEERING PARTIES ON HOUSEBOATS READY TO START ON THE YANGTZEKIANG. CHINESE GUARD IS IN UNIFORM

THE BEGINNING OF THE SURVEY OF THE CHUCHOW-CHINCHOW LINE BY THE AMERICANS. X—MR. SULLIVAN IN CHARGE OF THE PARTY

RECONNOITERING THE NEW AMERICAN RAILWAY ROUTES

Projected Line to Paoking Traverses Rich Country

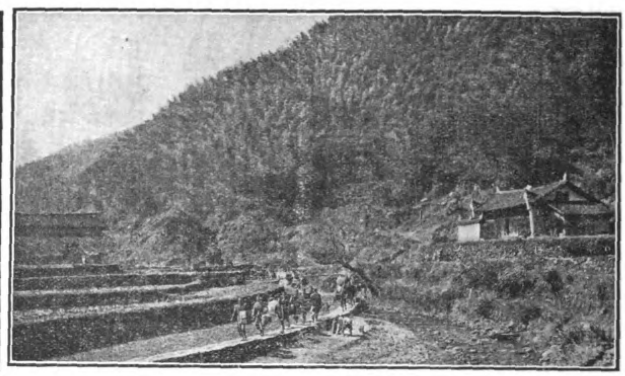
Engineers are now engaged making a reconnaissance of the railway lines recently awarded to the Siems-Carey Railway and Canal Company for construction. Parties are out on different sections and their complete reports are expected within a month or two. Already some are in and we are able in this issue to summarise in particular the interesting report made by Mr. Murray Sullivan, the engineer in charge of the section of the Chuchow-Chinchow line between the vicinity of Chuchow and the city of Paoking, in Hunan Province, a stretch of some 137 miles. If the road to Paoking is built it will be the northern section of the projected railway through Kwangsi Province, the line against which the French Minister has now seen fit to enter a protest—a matter which formed the subject of comment in last issue.

Mr. Sullivan and party began work in January and soon discovered that a connexion with the Canton-Hankow railway at Chuchow would be difficult and expensive on account of the rough, broken country to the west and north, the mountains rising abruptly 300 to 1000 feet above the general level of the country. The logical line, according to Mr. Sullivan, appears to be from the small station of Ichiwan, some twelve miles northwest of Chuchow, to Siangtan, and thence to Poaking. With the exception of about two miles of fairly heavy work in the rough, broken country where the line will descend through the hills, the grading should be fairly light. The only important bridge will be the crossing of the Siang river at Siangtan, just south of the city, where the narrowest point of the river is some 1586 feet. During the great flood of 1906, the greatest in the memory of "the oldest inhabitant," the water in the Siang rose 40 ft. 4 in. above its mean low water level.

In general the country traversed between Ichiwan and Siangtan, and about ten miles westwards of that city, is rolling, with many low hills and little valleys. West of Siangtan a great valley or plain spreads out for more than ten miles, rimmed by hills on the north and west and by the Siang and Lien rivers on the south and east. All of this country is well watered and almost all of it is under cultivation. It is all thickly settled. The little farm houses, usually built of mud brick with thatched roofs, sometimes tile, are usually set in a small grove of bamboo and camphor trees, with palms and other semi-tropical plants growing in front. Everywhere there are gardens and vegetables. Temples, large and small, old and new, dot the country. Little villages are found all along the route varying in size from a few families to several hundred. The people impressed Mr. Sullivan as being uniformly polite and very willing to give any information or render any service they could, which indicates an encouraging change of conditions from a few years ago when the natives were in such superstitious dread of railways and all that pertained to them.

Ichiwan is a small town of some 1500 people, surrounded by country producing rice, tobacco and barley. Wine is produced from barley and is shipped out in large quantities.

Mr. Sullivan's Party Crossing the Waifochiao Bridge. This Shows the Method of Transport Used on Land throughout the Journey



Country Between Yangchaitai and Siangsiang Typical of Rich Lands Traversed by New Line

There are ten brick and tile kilns at the place and pottery is made there. Hogs are raised and exported in considerable numbers. The total principal exports amount to about $390,000, while the imports are valued at $220,000.

Chuchow has a population of about 3,000 people engaged principally in the raising of rice, barley and tobacco, and in cutting and shipping wood from the adjoining districts. It is the junction of the Canton-Hankow railroad and the Chuping railway, the coal road which runs east to the Pinghsiang mines, a distance of 60 miles. The country around Chuchow for the most part is rough and mountainous with small valleys between the high hills. Chuchow is of no commercial importance. The climate is said to be mild all the year round, and the soil productive, though not particularly fertile. Large quantities of fertilizer are brought in, being for the most part cakes of tea wood seed. All vegetation seems to thrive, no doubt aided by the moisture in the air and the rainy season of about four months, and particularly noticeable is the plant life of more tropical parts such as bamboo, palms, ferns, etc. Rice is the one great crop. There are practically no silver or copper coins in circulation, the currency being paper, which is greatly depreciated, 2200 cash being equal to one Mexican dollar. There are no horses and no mules, the sedan chair being the chief means of transportation.

Siangtan is situated on the west bank of the Siang river, 31 miles south of Changsha. It is a large city of considerable commercial importance. Like most of the important cities of China it is walled, but the city which has grown up outside the walls is greater than that within. Siangtan spreads out over five miles of river front and has a population of from 130,000. to 200,000. The Siangtan district, comprising the country contiguous and tributary to Siangtan is very densely populated. The Magistrate states that there are 1,300,000 living in it. The principal products are rice, tobacco, barley, vegetables, also brick, tile and pottery. The principal imports are salt, sugar, piece goods, satins, petroleum, and medicines, there being a great business in the latter. The total export and import business is estimated by the Magistrate at over $100,000,000. The greater part of the business is with Changsha, but Siangtan is also the receiving and distributing point for a large territory to the west and south.

For many years Siangtan is said to have been a great trade centre. According to the letters of Baron Richthofen, written in 1870-72, at the time of his journey through the province, Siangtan was then the largest city in Hunan and was considered "one of the chief commercial places in China." In later years, however, with the building of the railroad to Changsha and the opening of other routes Changsha forged ahead and is now considerably larger than Siangtan. Siangtan remains, however, a logical trade centre, commanding the great basin of the Siang river and the Lien river. The trade routes from the west and south meet at Siangtan. It is also head of navigation for the large steamers during high water. Its river front is lined with a forest of masts of the native junks for several miles. The streets of the city are narrow, from six to ten feet wide, and are paved with stone. The shops are big ones and altogether the city bears the stamp of being substantial in every sense.

Leaving Siangtan (150 ft.), the road goes across a great plain or level valley, densely populated and all under cultivation. Little villages exist all along the route. The work would be light—all earth, although near Siangtan embankments would probably have to be about 12 to 18 feet in height for about one mile to keep the line up out of high water. Proceeding northwards the village of Kiangsar (180 ft.) situated on a low bluff on the Lien River is reached. The water was very low and only small boats drawing one to two feet of water could navigate the river. The population of Kiangsar is from 3,000 to 4,000.

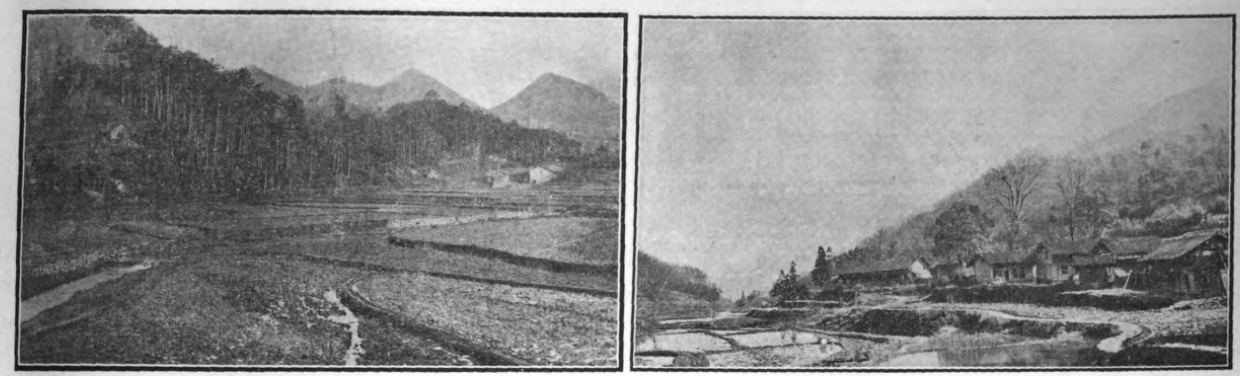
From Kiangsar to Chilipu the road gradually rises through low hills, passing over a small summit (200 ft.) and descending to the same elevation at Chilipu. The country is rolling and all is under cultivation.

The trail crosses the Yuenhu—a small tributary of the Lien River (which during high water backs up water and forms a lake near the village)—over a stone arch bridge, built 500 years ago, during the Ming Dynasty. The bridge is constructed of fine granite, and is of triple arch design. It is 220 feet long, 25.5 feet wide and 39 feet high. It was rebuilt 60 years ago. A marble tablet at one end of the bridge commemorates the building of the structure and its subsequent repairs. The granite came from Tingtzewan, a small town on the Siang River, 13 miles north of Changsha, where granite is still being hewn for various purposes. The stone is of exceptionally good quality.

Continuing South the country is flat and all in rice, to Singfutze (185 ft.). Rice is the principal product all through this section of country. The work all through would be fairly light, and practically all earth.

From Singipu, the general course is south-west, and a line would keep back about one-third of a mile from the river, and avoid the large gulches and ravines. The country is generally flat. A pagoda on a high mountain on the opposite side of the Lien River from Siangsiang can be seen in the distance shortly after leaving Singipu.

Continuing almost due west, Tungchienwan, a large village of 700 people, situated on the north bank of the Lien River, is reached; the village is located on a low bluff. There is a considerable fall in the river along here. Its width is about 500 feet, the distance from bank to bank being about 800 feet. Tungchienwan is located in a small basin, low hills extending around from the north-west to the south with the Lien River on the east. From Tungchienwan the course would be south-west and a line would pass around the foot of a high hill on the right, out into the great valley, or plain, in which Siangsiang is situated. The country is nearly flat, rising slightly to the west. Rice is



BETWEEN YANGCHAITAI AND SIANGSIANG, SHOWING RICE FIELDS

raised extensively all through this great valley, all of which is in a high state of cultivation. The country is densely populated.

The City of Siangsiang

Siangsiang, the district city of Siangsiang District, is situated on the north bank of the Lien River, 30 miles west of Siangtan, and is a city of considerable commercial importance. The city proper has a population of about 68,000 while the District claims a total population of 1,181,000.

Siangsiang is located in the center of an immense valley practically all of which is used for the cultivation of rice. It is also a great trading point, as the two main trade routes from the west and southwest join at Siangsiang and become one route east to Siangtan. Furthermore the smaller boats ply as far up the Lien River as Siangsiang nearly all the year, and considerable quantities of exports of various kinds are transported by coolies to Siangsiang where they are transferred to the boats and sent on down the river; other stuff being carried on through by coolies to Siangtan. Siangsiang is the general distributing as well as receiving point for the Siangsiang District, and by reason of its favorable location, enjoys a large trade. The principal exports per annum, according to the Chamber of Commerce of Siangsiang, are valued at $269,000, and comprise matting grass, 1330 tons; turnips, 7560 tons; and hogs, 10,000 head, all of which is at present shipped by boats to Siangtan. The imports total in value $1,031,000 and include indigo, 390,000 lbs; tobacco, valued at $130,000; cotton, 2,000 bags; muslin, 1000 bundles, each 426 lbs.; salt, 16,000 bags each 133 lbs.; petroleum, 15,000 cases; foreign goods, silks, satins, piece goods, etc. valued at $200,000; medicines, valued at $100,000, and sundries valued at $150,000. These imports are shipped from Siangtan and Changsha, about one half from each place.

The Lien River

The Lien river is one of the principal tributaries of the Siang River. It rises near the Sungshan mountain, 30 miles northeast of Paoking, and flows in an easterly direction, emptying into the Siang River about three miles west of Siangtan. The Lien is navigable by small craft as far up as Yangchaitai, during the high water stage; but on account of the rapids and shoals at many places in the stream, navigation is difficult and dangerous. During low water about four to six months each year all transportation on the stream is suspended and carrying coolies transport the stuff into and out of the country.

Continuing south-west along the valley of the Lien River, the country remains practically level, with very low hills. All is under cultivation. Southwesterly along the low hills, the trail passes through the hills over a little summit to the big stone arch bridge spanning the Lien River at Chuchingtu. This bridge is called Waifochiao. It was built 260 years ago, in the Ching Dynasty, and is an excellent example of stone work. It is of the usual arch design—there being nine arches, each having a span of about 45 feet. The length of the bridge is 626 feet, the width 27 feet, and the height 58 feet.

The type of arch is very similar to the old Roman arch and is exceptionally well built.

The arches root on large piers of granite, which have cut-waters on both upstream and downstream sides. Massive abutments support each end of the bridge. The entire structure is of cut stone—a granite of very fine quality.

The granite is said to have come from Shiehchaitu, a point 10 miles north of Tansze, or 40 miles by waterway northwest from the bridge site, the stone having been transported by small boats down a little tributary of the Lien River to Tansze and thence down the Lien to the bridge's site. This information is furnished by some of the old inhabitants living in the small village of Chuchingtu at the west end of the bridge. However, it appears from the great similarity of this granite to that which comes from Tingszewan on the Siang River 1.3 miles north of Changsha where granite of a very fine grade has been hewn for over 300 years, that the granite for this bridge may have really come from Tingszewan.

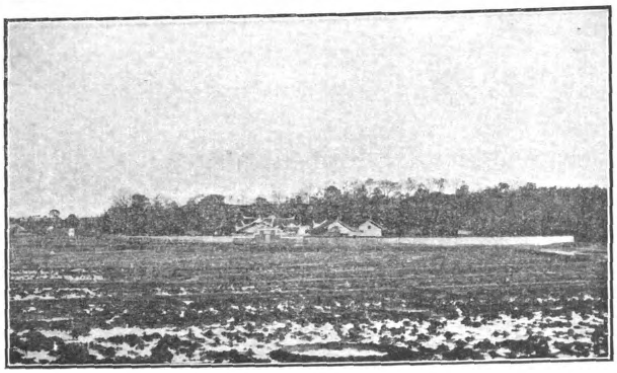
According to the marble tablet at the north end of the bridge (from which most of this information has been obtained), during the 24th year of Tao Kuang—about 60 years ago—this bridge was partially washed out by flood, and was repaired two years later. During the 13th year of Kuang Hsu—about 30 years ago—this bridge was again damaged by flood, and was again repaired during the same year. In the 3rd year of the Republic of China (1914) some slight repairs were made to the bridge, caused by the flood of the previous year. The bridge to-day appears to be in good condition.

A line would pass on the east side of the hills, or low mountains, in approaching the crossing of the river and would probably cross about 1,200 feet below, or east of, the bridge above mentioned. The railway bridge would be about 650 feet in length and should be about four feet higher than the stone bridge—that is, about 62 feet high. The river banks here are about 30 feet above present low water.

Continuing south-west, the valley spreads out on the north. There are large rice fields for one to two miles.

At Waikuaiting, a village of 25 families, 150 people (360 ft), the entire town is engaged in making umbrellas of bamboo and oiled paper. Southwesterly for about 3 miles the line would pass through hilly country—there being hills of every description. high and low, steep and flat, big and little,—the country being cut up with many ravines and gulches.

Yutong is a small town situated on the northeast side of the valley through which the Yutongho, a tributary of the Lien River, flows. On the opposite side of the valley from Yutong is the village of Yangchaichi. Leaving Yutong the trail crosses the Yutong over a granite bridge 125 feet long, with limestone piers. The roadway of this bridge is composed of granite stringers 10 feet long, 9 inches thick, and 14 inches wide. The central spans



COUNTRY GENTLEMAN'S HOME NEAR SIANGTAN. THE CIRCLE IN THE FOREGROUND REPRESENTS A SMALL PORTION OF FIELD RESERVED FOR SEED DEVELOPMENT

CANTON-HANKOW RAILWAY STATION AT ICHAIWAN, A FEW MILES FROM CHUCHOW, WHICH IT IS PROPOSED TO MAKE THE JUNCTION FOR THE AMERICAN LINE

of the bridge have granite stringers as long as 28 feet and 10 inches thick, and 14 inches wide. The width of the bridge is about 6 feet, a stone railing being built on each side. The trail follows a narrow valley about 1,000 feet to 1,500 feet in width, in which rice is raised in considerable quantities to Wulipai (380 ft) a small village of 12 families, where the valley turns to the west. There are steep slopes on both sides with small pines growing on the side hills. For five miles the route passes through narrow valleys, gulches, and ravines, in rough, hilly country. No serious obstacles exist however. The general character of the country for a further five miles is very hilly, and a short tunnel about 400 feet long might be found advisable here; although there is a possibility of getting a line through to the east which would be shorter. The hills vary in height from 75 feet to 300 feet, the rock being limestone, from which lime of good quality is produced.

Chiehbuton (410 ft.), a village of 600 people, is located one mile from the Yungfeng River and about two miles southeast from Takiangkou, the junction of the Lien River and the Yungfeng River. The Yungfeng River makes a big bend at this point, its general course in the direction of Yungfeng being south, 80 degrees west. It is a stream 250 feet wide, with banks 20 feet above present low water.

Paper from Bamboo

Chiehbuton is a town of more importance than the average village passed; for considerable quantities of bamboo paper are manufactured in this vicinity, amounting to about an average of 665,000 pounds each year (the bamboo being cut every other year). This paper goes by boat to Siangtan. Lime of good quality is burned in four kilns near the town and is used in the manufacture of bamboo paper and as fertilizer. It sells for 13.5 cents Mex. per 100 lbs. Most of the lime produced is used locally though a small amount goes to Siangsiang. Considerable quantities of rice are raised in the locality.

Continuing south-west, there is a range of mountains on the east about one mile distant which vary from 700 feet to 1,300 feet in height, while on the west is the Yungfeng River about 300 feet distant. Further to the west there are low hills about 200 feet in height. The entire country is very hilly and rough. The soil is a brown loam and clay, while the hills are clay and limestone. Bambooware is made in the small villages. The country continues to rise steadily to the south, there being a rise of 25 feet in 3,600 feet. Limestone is quarried from a big ledge 150 feet from the river.

The country continues rugged—broken up with many low hills and ravines and small drainages. Hills are 100 feet to 500 feet in height. Rice and vegetables are the principal products. Coal outcroppings appear on the mountains all around in this vicinity, but no development work has been done to determine extent or quality. There is an old coal mine, not operated now, one mile south of Chihshipu, but it does not amount to much. Numerous holes are dug in the mountain sides for coal all around the locality. There is also a big limestone quarry, two large veins of limestone, each about 20 feet thick, having been opened up.

The lime is used quite extensively as fertilizer. A mile or so further on the country flattens out somewhat, there being low red clay hills and many little valleys, with a small growth of pines on the hills. A stone bridge, 65 feet in length, of 2 arches, 20 feet in height, and 12 feet in width is crossed, and the route then traverses rice fields to the small village of Tunglinpu (430 ft.). The country is thickly settled.

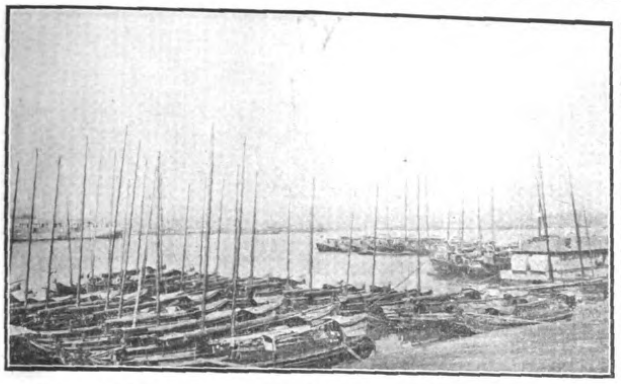
The trail crosses the Yungfeng River at Yungfeng (495 ft.) over a stone arch bridge about 175 feet long, 25 feet wide, and 25 feet high. This bridge is of limestone, and of the usual arch design, there being five arches of 35 feet span each. Yungfeng is an important town of 10,000 population on the trade route to Paoking, situated 63 miles southwest of Siangtan, and 62 miles northeast of Paoking. Yungfeng is located on the Yungfeng River, a large tributary of the Lien River, in the midst of a large valley. There are about 400 shops in the town, which is located on both sides of the river and is connected by a bridge 175 feet long, 25 feet wide and 25 feet high, having 5 stone arches of 35 feet span each. The country is well settled all around, and is very productive, the principal products being tea, rice, paper, and cotton cloth, which is woven in large quantities. The town is the head of navigation on the Yungfeng River for small craft which carry the exports down to Siangsiang and Siangtan, first by the Yungfeng River, then down the Lien River and then by the Siang River.

On all sides of the valley the country is rolling, the hills being mostly decomposed red sandstone and clay, while the valleys are loam. The tea is raised principally on the hills of decomposed red sandstone, and is said to be a very good grade of red tea, or black tea, as we usually call it.

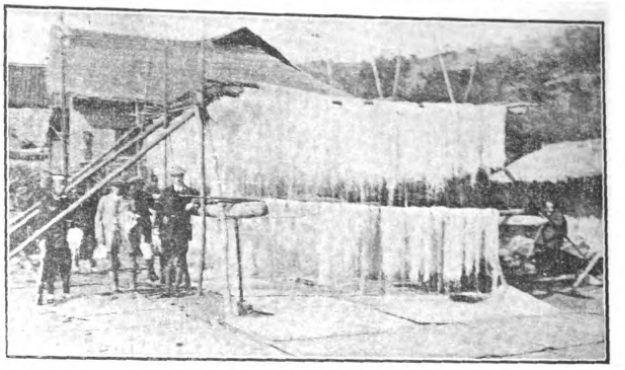
The principal exports are valued at $255,300 and comprise red tea, 5,000 cases, 65 lbs.; bamboo paper, 10,000 bundles, 42 lbs.; cotton cloth, 300,000 pieces, 10 yds. each. The cotton cloth is woven from cotton imported from outside points, coming principally from Hankow. The chief imports are valued at $1,812,000, and include cotton, 40,000 bags, each 65 lbs.; salt 40,000 bags, each 133 lbs.; muslin, 4,000 bundles, each 450 lbs.; medicine, $300,000; satin, damask, silk and piece goods, $20,000, and flour, sugar and sundries, $500,000.

In addition to the above exports, various exports from Paoking are sent overland by coolies and are loaded on the small boats at Yungfeng, when the water is high, whence they go down the river to Siangtan. Such exports comprise iron, indigo, hides, etc.

The Yungfeng River rises in March and April and begins to fall in August and September. It is navigable by the small craft about six or seven months of the year.



JUNKS AT CHANGSHA ON THE SIANG RIVER. THESE ARE SMALL BOATS WHICH CARRY TRAFFIC UP-RIVER



VERMICELLI MAKING AT YUNGFENG

Tea Plantations and Coal

The route continues south-west, across the valley of the Yungfeng, which is all in rice, and skirts low hills of red clay. The river covers the fields about two feet during high water. For the next seven miles the line would pass through a rolling country, of low red hills and little valleys. These red hills are of decomposed sandstone, on which is grown the tea shrub. There are extensive tea plantations in the locality. The country through this section is beautiful.

The Shangszechiao coal mine is situated about eight miles to the south-west. The road passes several small villages and runs through a little more hilly country. Near Yanghuchiu, (650 ft.), the country rises about 70 feet in 5400 feet, the large mountain, of Tsai Tse Shan, being to the west.

There are low, flat hills and many little valleys, and the line would continue through rolling country passing several villages to the town of Chingsuping (700 ft.), 78 miles west of Siangtan and 15 miles south-west of Yungfeng. This is one of the more important towns on the route. Coal outcroppings appear at many places near this point. Coal is now being mined at the Changchaichung mine, 2 miles north-west from Chingsuping, which produces about 667 tons of coal per month working full handed 200 men, but now only 50 men are working. There are also mines 1.3 miles to the north-east not in operation at present.

Chingsuping is a busy town; large quantities of cotton cloth are woven and considerable quantities of tea are raised and shipped out. The coal from the nearby mines also passes through the town.

The principal exports are cotton cloth, 700,000 pieces, each piece 10 yards, valued at $420,000, and red tea, 1,000 cases, each 65 lbs., valued at $13,000. The cotton cloth is carried by coolies to Paoking, Ningsiang and Aganhua; also to Yungfeng where it is loaded on small boats and sent down river to Siangsiang and Siangtan. Red tea is carried by coolies to Yungfeng and then by boat to Siangtan.

The imports are cotton, 5,000 bags each 65 lbs. valued at $65,000; muslin, 500 parcels, each 480 lbs. valued at $75,000; medicine, $50,000; flour, sugar and sundries, $50,000; foreign goods, piece goods, etc., $30,000; salt, 8,000 sacks 133 lbs. each, $08,000. Two-thirds of the salt comes from Hangyang and Hunglomiao, the other one-third coming from Siangtan.

From Chingsuping, the line would continue through rolling country full of low hills and little valleys, to Kailing, through fields of rice and wheat. The valley is thickly settled, Taitzeshang, a small village, is noted for a very large camphor tree said to be over 1,000 years old growing on the east side of the main trail, the tree being walled up around the base with stone.

Kailing (620 ft.) is a town of 1000 people. The hills round about are 50 feet to 200 feet high, and thence the route passes through some rough broken country until Shihchaiwan (630 ft.) is reached. This is a small village situated in the midst of limestone hills.

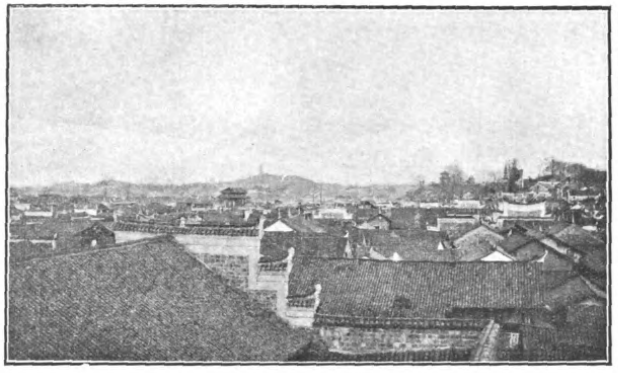
A deep valley, with hills on either side varying from 250 feet to 1000 feet in height is then traversed. Coal diggings are numerous. The Yuchaichung coal mine is located about one-third of a mile south-east of the trail. This is a rather rough section of country, and the road continues through hills steadily ascending, to Kingszepu (900 ft.). The Yinyeling iron mines, and furnace, are located one-third of a mile south-east of this place. The country grows more rugged and broken, less settled and wilder as the road goes on. The principal products in this section are rice, wheat, and potatoes, but only a small amount is raised and all is consumed locally. Here the country flattens out somewhat; the hills are not so high or rugged. The road continues to ascend the divide to the village of Yaofungling registering 1300 feet. If an alternate line is surveyed in addition to the trail route, to go through a pass in the hills, a considerable saving in distance may be effected and the line will come out in a large, well cultivated valley. Coal diggings are to be seen up high on the mountain to the left and coal outcroppings are observable at various points in the vicinity.

There are coal mines at Kingchaichiao two miles north-west of Chutongpu. The line passes through a valley varying in width from 000 feet to 2,000 feet, the low hills on the east side being covered with pines 20 feet to 30 feet high. There is considerable underbrush on the hills—an unusual thing in this part of Hunan. Charcoal is made from wood from the nearby hills.

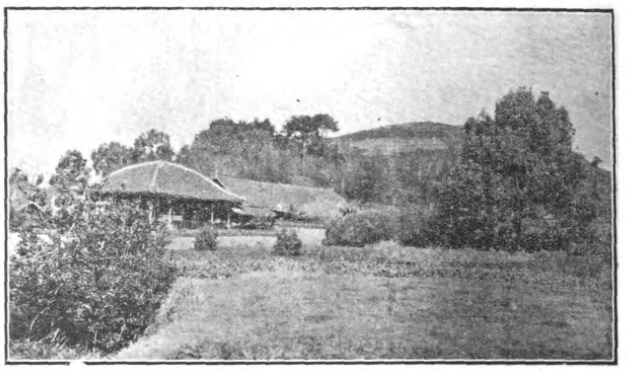
The country becomes very hilly again, there being many hills from 50 feet to 250 feet in height, on all sides with very small valleys between. There are trees on all the hills—mostly pine—and the principal products are wheat and potatoes. A mile or so further on the hills are lower and the slopes less steep, the country being rolling. Some tea and rice are raised. Near Tuanshanpa, a little village, the valley closes in around to the south and west pine-clad hills are passed. Shortly after Hsüchaipu (1,115 ft.), a small village, is an ancient pine tree, about 40 feet high and four feet in diameter, with a stone tablet at the base. This tree is said to be older than the Ching Dynasty—over 1,000 years old. The tablet is broken and the data obliterated. The line continues through hilly country, passing low mountains on the right with limestone outcrops, rugged and steep, about 300 feet to 500 feet high. On the left, there are low hills and cultivated country. The principal products are wheat and red peppers, while further on in addition to wheat and potatoes, a few peaches and pears are raised. The line would pass through a gap between the limestone mountains and would cross many little valleys extending in all directions. The country is very hilly. The outcrop of limestone in this section is similar to that seen in the Garden of the Gods in Colorado.

The Liuchaiwan iron mine is located four miles north-east of Hetienpu, near the small village of Shisatsing.

The country hence is rolling, and ascends toward the west, pines growing on the hills. From Matongting (1,195 ft.), the line would gradually descend through rolling, easy country, and would continue in a westerly direction across numerous small



VIEW OF PAOKING



FORMER VICEROY'S HOME NEAR PAOKING

valleys and hills, in rolling country, to Hungchiao (1,105 ft.), a town of 1,200 people. This is a large town situated on both sides of the Shaoshui River, in the midst of a large valley all in rice. The Shaoshui is a stream about 200 feet to 300 feet in width at this point, which flows south, then turns north and empties into the Tze River at Paoking.

Hungchiao is a good trading point on this route; there are coal and iron mines in this vicinity and there is also a considerable amount of good farming country tributary to the town. The principal products are tea, tobacco, and red pepper; also coal and iron.

The Shaoshui is crossed by a stone arch bridge, 225 feet long, 22 feet wide, and 30 feet high. The bridge has six arches, each of which is about 30 feet span, resting on stone piers. The bridge is covered over with a tile roof. There was no information available showing when this bridge was built, but the tablet indicates that its original name was Taifingchiao, but that during the Ming Dynasty, its name was changed to Hungchiao. The bridge is at present in a good state of repair.

The line would cross the Shaoshui a little north of or above, Hungchiao, necessitating a bridge about 220 feet long and 25 feet high, and then would have a steady descent, with the exception of crossing three small ridges. The country is very hilly and is cut up with many cross, or side, drainages. The line would pass near several villages, and near Foshingting (965 ft.) there is about one-half mile of rough, hilly country here, in getting out of valley and over into other drainage would pass small valley and hill land, producing rice, wheat and potatoes, into Paoking (955 ft.)

Paoking—An Industrial Centre

Paoking, the district city of Paoking District, is an important business center of about 125,000 population. It is a walled city located at the junction of the Shaoshui River and the Tzu River, in rough, mountainous country. Paoking is the center of a large mining district in which are found many coal and iron mines, also some antimony mines. Other minerals are also reported in this district, but coal, iron and antimony are the principal mineral products.

The iron ore mined in this vicinity is used in the numerous native foundries at Paoking in the manufacture of kettles, pots, nails, and other implements and articles of many kinds and descriptions. The coal from the mines nearby is shipped in large quantities to Hankow and other points. Timber from the mountains to the south is shipped from Paoking to Changsha, Hankow and other points. Large quantities of bamboo paper are made in this vicinity, also considerable lime is burned here, and shipped out. The shipment of hides and furs from Paoking is a big business. Tea, vegetable seeds, rice, red pepper and indigo are the principal products of the soil, all of which are exported in large shipments. There are six sugar factories at Paoking which produce considerable quantities of brown sugar from sugar-cane raised in this vicinity.

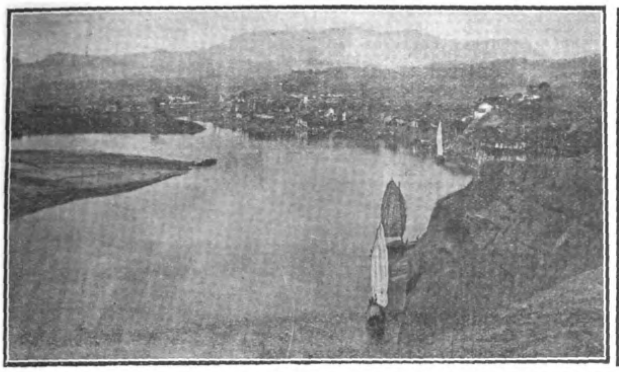
The climate is mild all the year round, except during summer months, June to August, when it is very hot. Oranges, lemons, sugar-cane and other semi-tropical fruits and plants flourish.

Notwithstanding the fact that the coal mines have no modern equipment and only the crude native methods are followed, a large tonnage of coal is produced each year. Eighteen companies are engaged in the transportation of coal alone from Paoking, and ship 160,000 tons a year to Hankow. These companies pay a total tax of 6 cents per ton to the provinces of Hunan and Hupeh on all shipments. The coal is shipped in small wooden boats, carrying 50 to 90 tons each, and it takes from one week to one month, depending on the height of the water in the river, to make the trip from Paoking to Hankow, a distance of 525 miles. During all the year the trip down the Tzu River from Paoking (the "River of Rapids," it is called) is fraught with danger, on account of the many rocky shoals and rapids. Under favorable conditions about 90% of the coal boats reach their destination, 10% of the boats being wrecked and lost, with their cargo, in making the journey. There have been seasons when as many as 40% of these boats never reached their destination, being lost in the river. As a result of this condition, these transportation companies build each year about 1000 new coal boats at Paoking which are constructed of native lumber from Sinning, and which make the journey only once down the river; if they reach Hankow, the coal is sold and the boat is knocked down and the lumber sold for what it will bring on the market. The transportation companies at Paoking have also about 300 boats of 40 to 50 tons capacity, strongly built, which can go down and come back up the river during high water, making three trips per annum. A few years ago Mr. Lien Chuan-low, head of one of the coal companies at Paoking, initiated a movement for deepening and otherwise improving the Tzu River, so as to render it safer for navigation, but sufficient funds were not raised and the undertaking was finally abandoned.

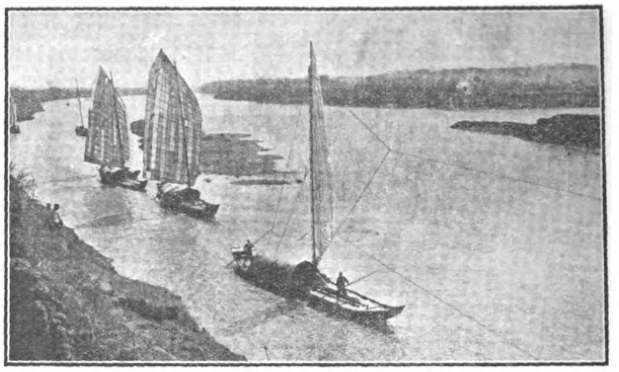
According to the statements of the Paoking coal men there has been a steady increase in price of coal at Paoking. Forty years ago, the price of coal was 75 cents Mex. per ton; twenty five years ago the price doubled to $1.50, and about fifteen years ago it increased to $2.25; and it has continued to increase until it now costs $3.00 per ton at Paoking.

A Great Coal and Iron Field

The coal is said to be a good quality of bituminous coal, comparing favorably with the Pinghsiang coal. In fact, the Paoking coal usually brings a better price on the Hankow market than the Pinghsiang coal, selling for $9.80 Mex. as against $7.00 Mex. for Pinghsiang coal. However, last winter there was a shortage of coal at Hankow and the price of Paoking coal rose at one time to $16.80 Mex. per ton. About 10 per cent of the Paoking coal sold on the Hankow market comes from the Nieumasze coal mines, which are described in a separate paragraph below.



LIEN RIVER AT TANSHI



TYPICAL VIEW ON THE LIEN RIVER. NOTE THE METHOD OF ATTACHING THE TRACKING ROPE

The country east of Paoking and south-east of Hungchiao, is full of coal, outcroppings being visible at many points, and many small mines are now in operation. It is said that at a place called Lutzewha two miles south of Hungchiao and east of Shaoshui River, there was a big mine 20 years ago. A shaft was sunk 400 feet in depth and an excellent coal bed was encountered. The coal seam was 27 feet thick. This mine was operated 10 years when it was accidentally set on fire, and all shafts were closed in an effort to extinguish the flames. After a year had passed the shafts were opened again and it was found that the mine was still burning. The shafts were again closed and the mine abandoned.

The iron mines of this district are usually found in proximity to the coal deposits. They are located at various points from five miles to 20 miles east and north-east of Paoking. The ore is said to bear a very good grade of iron, and judging from the tensile strength of the thin castings made at Paoking this would appear to be true, in some degree at least. The total output of the four iron mines, which are described later on, amounts to about 1,560 tons per annum or 130 tons per month.

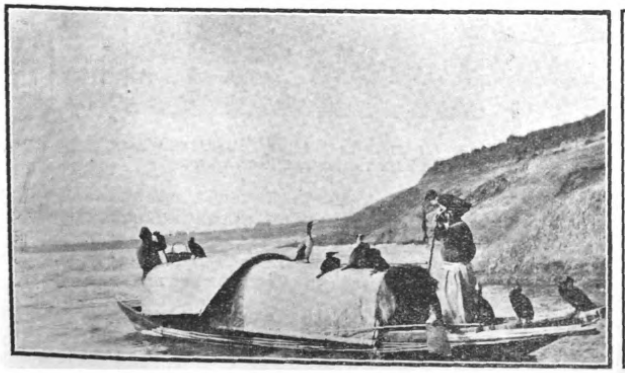
A large part of this iron is manufactured into various articles and implements at Paoking and the product shipped out to Hankow, Changsha and Siangtan. There is, however, a considerable amount of pig iron going out both by coolie carrier and by junk from Paoking. It should be remembered that most of this iron, as well as the coal above referred to, comes from near the surface and no scientific methods have been followed in the mining of either the coal or iron. No doubt better coal and iron ore would be obtained at greater depths, although it is claimed that both the coal and iron now mined are of good quality. The coal people at Paoking state that if a railroad were built into this section of the country the coal and iron mines would undoubtedly be opened up on a large scale as soon as transportation facilities for the product were available.

Antimony Deposits

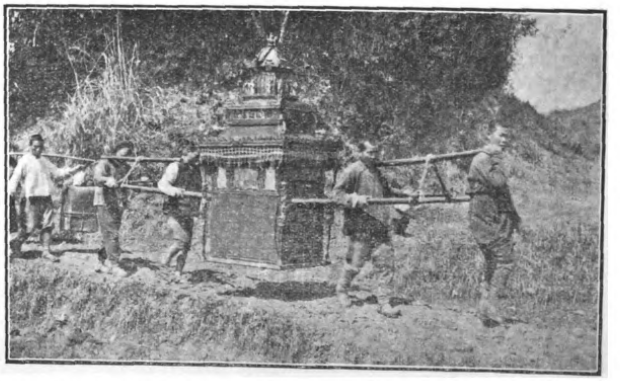
The antimony mines are located about 15 to 20 miles north-east and north-west of Paoking, Sinhua being the principal shipping point for the mines to the west of the Tzu River, and Yangchaitai being the principal shipping point for the mines north-east of Paoking. No exact figures for total output of the antimony mines were obtainable, but it was stated that considerable tonnage could be expected from this source; as the shipment from Sinhua, during low water, for about six months, would undoubtedly go by rail from Paoking; and the Yangchaitai shipments would probably go by small boats to the nearest point on the proposed railroad, between Yungfeng and Siangsiang, and would there be transferred to the railroad. The antimony shipments all go to Changsha, which is the big center for this metal and from there it is shipped to all parts of the world.

In addition to the minerals above mentioned, the following are the principal annual exports from Paoking:

Tea, 133 tons shipped by boat to Hankow, red pepper, 6,650 tons, carried by coolie to Yungfeng, 62 miles, and thence by boat to Siangtan, 63 miles; hides, 665 tons, of which one-third of this amount is carried by coolies to Siangtan, the remainder being shipped by boat to Changsha, 260 miles; indigo, 1,990 tons; about 60% shipped by boat to Hankow and 40% to Changsha, vegetable seed, 2,000 tons seed cakes, after oil is pressed out, shipped as fertilizer to Changsha, the vegetable oil going to Sinhua; nails, 6,650 tons shipped by boat to Hankow; iron kettles, 660 tons, shipped by coolies and by boat to Kweilin principally; bamboo paper, 120,000 bundles, weighing 3,900 tons, shipped by boat to Hankow; timber, 500,000 pieces, mostly long poles about 8 to12 inches diameter at butt, shipped in rafts down the river to Hankow and other points. The total tonnage of the above is 184,148 tons per annum; over 500 tons per day.

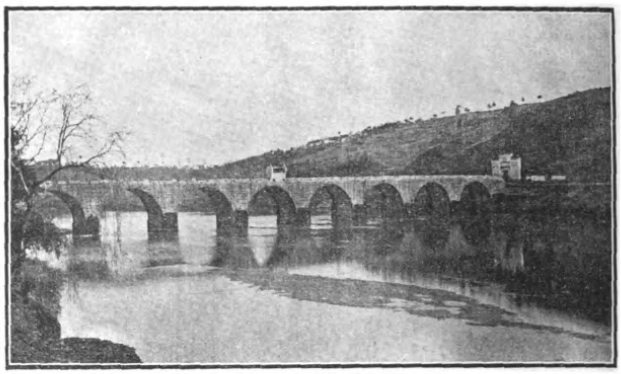


CORMORANT FISHING ON THE SIANG RIVER



A BRIDE'S CHAIR IN CENTRAL HUNAN. THE CHAIR BRILLIANTLY COVERED. THE BRIDE IS LOCKED IN THE CHAIR UNTIL HER FUTURE HUSBAND RELEASES HER

TYPES OF CHINESE CHILDREN AT LULIANGTAN



THE WAIFOCHIAO BRIDGE

There are other exports such as sugar, bamboo ware, furs, etc., but data on these items were not obtainable.

Figures for imports were not available but the following commodities are said to be the principal imports: salt, medicine, cotton, silks, satins, piece goods, muslin and petroleum. The total imports are said to amount to approximately $20,000,000 per annum.

On account of the danger in navigating the Tzu River large quantities of exports and imports out of, and into, Paoking are carried by coolies instead of on boats. This condition would of course be favorable to a railroad if constructed into this section of country.

The total population of the three Districts of Hunan, which would be served by a line of railroad from a connexion with the Canton-Hankow Railway at Ichiawan to Paoking, a distance of 137 miles, would be: Siangtan District 1,300,000 population; Siangsiang District 1,181,000; Paoking District 1,460,000; total 3,941,000 population.

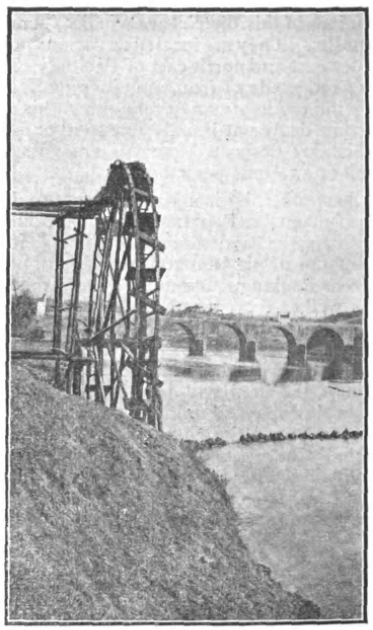
In conclusion, it would appear from the general conditions of this section of country,—its large population, natural resources, and need for transportation facilities—that a line of railroad to Paoking would secure sufficient tonnage to warrant its construction, in the event of the development of the mineral resources of this section. The future possibilities of development of the coal, iron and antimony deposits, are immense, as these great natural resources have as yet been barely touched, on account of the lack of transportation facilities.

The Tzu River is a stream about 900 feet in width and 10 feet in depth at Paoking, with banks 18 feet to 30 feet high, at the low water stage.

There are numerous places in the river where the rocks are near the water surface and where the rapids are very dangerous. This condition obtains for six months of the year, during low water stage, and during the remainder of the year it is also dangerous, though not as much so as during low water.

The larger coal boats require a crew of 16 men going down stream, as against a crew of four men for larger boats on the Yangtzekiang at Hankow. Sails are never used going with the current, on the Tzu River, on account of the great danger of going on the rocks or turning over at the rapids; oars are used exclusively, in handling the boat down stream, and much skill is required to navigate this stream successfully.

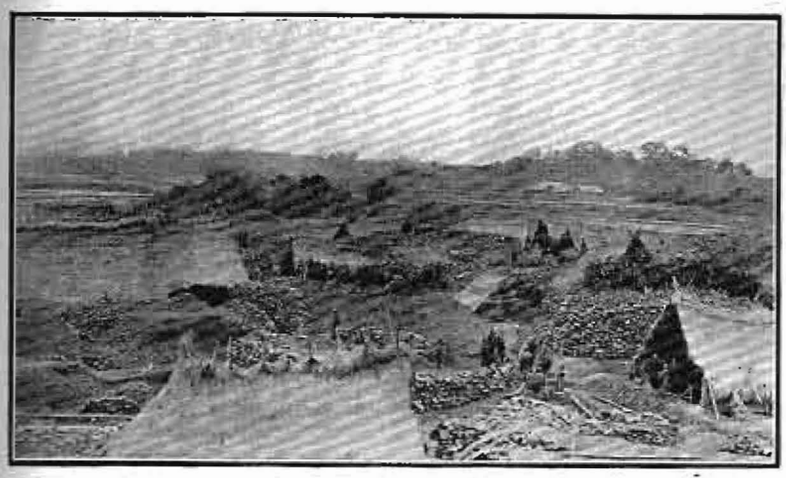
Yangchaitai is an important town 43 miles northeast of Paoking, and is situated on the Lien River. It is a distributing and shipping point for a considerable area of country lying to the northwest and southwest. The Lien River at this point is about 100 feet wide and during high water stage is navigable by small boats. There is a large stone bridge 190 ft. long, 26 ft. wide and 40 feet high, across the Lien River at this place. This bridge is of three stone arches of 60 ft. spans. The bridge was built of limestone 280 years ago, and according to the tablet has never been repaired, although at the present time it is in good condition.



WATER WHEEL IN LIEN RIVER. ELEVATES WATER 30 FEET TO IRRIGATE RICE LANDS

The principal exports amount to, annually: antimony sulphide 1,000 tons; antimony regulus, 600 tons; bamboo paper amounting to $400,000; coal 2,000 tons. Imports comprise kerosene, muslin, piece goods, salt, etc., aggregating $400,000 per annum.

The antimony plant of the Kuangyifo Company is located here. The population of Yangchaitai is 20,000.



CHANGCHAICHUNG COAL CAMP NEAR CHINGSUPING, THE SHAFTS BEING UNDER THE THATCHED ROOF

NIEUMASZE COAL CAMP NEAR PAOKING, THESE SHAFTS ALSO PROTECTED BY THATCHED ROOFS

The Mines on the Route

The Changchaichung Coal Mines

The Changchaichung coal mines are located two miles north-west of Chungshuiping. The property is owned by a small stock company of Chinese, the capital is $2,500, and there are over 200 shareholders. The mines have been producing 667 tons of coal per month with 200 men, but at present there are only 50 men working, and the output is reduced proportionally. About 20,000 tons of coal now mined is on hand at the mines. Native methods are used in mining. The main shaft is 6 feet by 8 feet, and the depth is 300 feet. The coal seam is four feet thick and was struck 80 feet below the surface of the ground. One shaft has been sunk to a depth of 330 feet. Water was encountered 12 feet below the surface of the ground, and more water was struck at a greater depth. The water is pumped out with native pumps. There is one air shaft, 4 feet by 5 feet, on an angle of about 45 degrees. The country rock is limestone. The coal is said to be a good quality of bituminous coal. It sells for $1.20 per ton at the mines. The greater portion of this coal goes to Yungfeng, where it sells for $4.80 Mex. per ton. The distance to Yungfeng is 17 miles, and the cost of transporting the coal by coolies is $2.40 Mex. per ton from the mines to Yungfeng. It requires one day for carrying coolies to make the trip.

Chitzelung Coal Mines

The Chitzelung coal mines are located one mile north, 25 degrees east from Chingsupu. They are old mines—opened 26 years ago—but, after 8 years' operation, work was stopped "on account of lack of capital." From the appearance of the workings it appears that the mines at one time produced considerable quantities of what is said to be a fair grade of bituminous coal. At present no work is being done. The coalbed is said to be 3 to 3½ feet thick, and is inclined at an angle of about 45 degrees. The depth of the shafts is from 200 to 300 feet. Coal was encountered about 75 feet below the surface.

There are coal outcroppings all over the south side of the hill. The country rock is limestone.

Yuchaichung Coal Mine

The Yuchaic ung coal mine is located 1/4 mile south-east of the trail, in low mountains in rough country. This is a new mine, opened in September, 1916. The coal-bed was encountered at a depth of 80 feet below the surface of the ground. The thickness of the coal-bed is 2 feet to 3 feet, and dips at an angle of 45 degrees. Twenty men are now working in the mines. The output is 66 tons per month, and it is said to be a good grade of bituminous coal. Water was encountered 40 feet below the surface, native pumps being used for removing it. There are small native shafts on an incline of about 45 degrees. Native methods of mining are used. No development work has been done to determine the depth or extent of the coal measures. The country rock is limestone. The coal is sold locally in small quantities. There are coal outcroppings on the mountain sides all around.

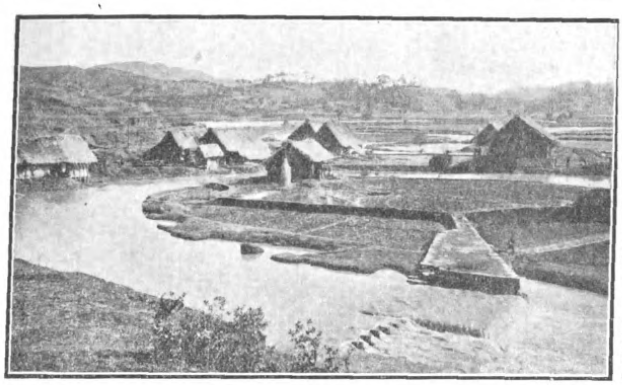
Kingchaichiao Coal Mines

The Kingchaichiao mines are located 2 miles north-west of Chotongpu in low hills near the little village of Kingchaichiao. The land is owned by a man named Liu and the mines are operated on a royalty basis by a man named Wang and others. The royalty is 30% of all coal mined, 42 men are working in the mines in 3 shifts. Native methods are used. There is no modern equipment. The coalbed is about 3 feet thick, and is 20 feet to 60 feet below the surface of the ground. The coal seam dips at an angle of about 45 degrees. The mines are now producing 4 tons per day, or 120 tons per month. The depth of the shafts is 160 feet at present. There are 6 shafts each about 3 feet by 4 feet, roughly timbered. Water was encountered at 20 feet and 40 feet below the surface. Small native pumps are used, and when more water comes into the shaft than can be handled, that shaft is abandoned and another shaft dug. This coal is said to be a good grade of bituminous coal, but no development work has been done to determine the extent of the deposit. The output is disposed of locally at a price of $1.20 Mex. per ton at the mine. Coal outcroppings are visible all around in this vicinity.

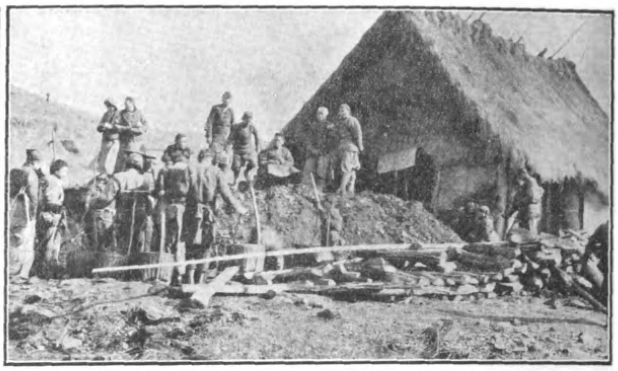
Nieumasze Coal Mine

The Nieumasze mine is located 6.6 miles south of Hungchiao, in the low hills near the Shaoshui River, and is owned and operated by the Paoshing Coal Company of Paoking. It is a new mine, having been opened in June, 1916. There are many coal outcroppings all around in this section. At present there are 600 men working in this mine, which is producing 40 tons per day, or 1,200 tons per month. The coal-bed is 8 feet thick, and lies nearly flat. Native methods are employed. There is no modern equipment, and the coal is hoisted out of the mine by a windlass. There are 7 shafts with an average depth of 80 feet to the coal. The underground workings extend 300 feet out from the main shaft. Very little water is encountered in the mine. The mine is located in sandstone formation, about 40 feet above the Shaoshui River. The coal is said to be a good quality of bituminous coal.

The coal is loaded into small junks and shipped to Paoking at a rate of 50 cents Mex. per ton. It sells at the mine for $2.75 per ton and at Paoking for $3.25 per ton. The distance by water to Paoking is about 15 miles; it takes from one-half day to one day to make the trip, depending on the height of water in the river. However, during three or four months of the year, during the low water stage, it is very difficult to make shipments by river from the mine. The mine appears to be one of the most promising among the many located in this section.



HOKI COAL MINE COMPANY'S CAMP NEAR PAOKING



HOKI COAL MINE, NEAR PAOKING. SHOWING SHAFT COVERED WITH THATCHED ROOF

Hoki Company's Coal Mine

The Hoki Company's coal mine is located 2½ miles east of Paoking, and is operated by Mr. N. S. Yao and associates of Paoking. It is in hilly country in the drainage of the Shaoshui River. The coal-bed is 3½ ft. thick and lies 60 ft. below the surface of the ground; the coal bed being under 30 feet of sandstone. The seam is inclined at an angle of about 45 degrees. There are eight shafts down 150 ft. This mine is turning out 100 tons of coal per day. There are 300 men working. Water is encountered at a depth of 30 feet. Native pumps are used for pumping the water out of the mine.

A royalty of 7 per cent is paid to the family which owns the land on which this mine is located, for all coal found in this area. There are about 160 acres of land controlled by the company. The surface of the ground is under cultivation. The prevailing stone is sandstone. Only native methods are used in the mine. The men work in four shifts of three hours each. Windlass and baskets are used to hoist the coal out of the mine.

This is said to be a good grade of bituminous coal and finds a ready market in Hankow, to which point it is shipped by boat at a cost of $3.33 per ton. It sells for about $10 to $16 per ton at Hankow. The price at the mine is $4 per ton in small quantities.

Foshun Company's Coal Mines

The Foshun Company's coal mines are located 5 miles east of Paoking, near the Shaoshui River, and form a property comprising 20 acres, situated in rough broken country in the drainage of the Shaoshui River. It is operated by Mr. N. S. Yao and associates of Paoking. The coal-bed is 3 ft. 6 in. thick and lies 70 ft. below the surface of the ground. The coal seam is inclined at an angle of about 40 degrees, 300 men working at present. There are six shafts down 160 ft. The output is 30 tons daily.

This is said to be a good grade of bituminous coal which finds a ready market at Paoking and Hankow. It is transported from the mine to the Shaoshui River, two miles, where it is loaded on small boats and shipped to Paoking. From Paoking, the coal is shipped to Hankow. During the past winter when there was a coal shortage this coal sold at $20 per ton in Hankow.

The prevailing rock is limestone. Water was encountered at a depth of 30 feet. A foreign pump is used for pumping water out of the mine.

A royalty of about $500 an acre is paid to the family which owns the land on which this mine is located, for all coal found in the area.

The Yinyeling Iron Mine

The Yinyeling iron mine is located 1/5 of a mile south, 20 degrees east from Kingszepu, and is situated in mountainous country near the route of reconnaissance. The owner of the mine is H. K. Liu, who lives two miles south of Kingszepu. The ore body is 2 feet thick and dips at an angle of 45 degrees. There are 7 shafts about 3 feet by 3½ feet; depth 200 feet below the surface of the ground. Iron ore was struck 10 feet below the surface of the ground. 35 men are now working in the mines, 5 men working in each shaft. The mine is worked on a royalty basis; one-seventh of all ore mined being paid to the owner.

The iron ore is smelted in the native blast furnace, which burns charcoal, and which is now in operation near the mine. The furnace turns out 1280 pounds of pig iron per day, or about 20 tons per month. Iron is cast in flat circular pieces ½ inch thick, 2 feet in diameter, and each piece weighs about 40 pounds. The pig iron is shipped by coolies to Yungfeng.

Vengmotong Iron Mine

The Vengmotong mine is located about 5 miles east of Paoking, and is operated by Mr. N. S. Yao and associates of Paoking. It is situated in the hills in the drainage of the Shaoshui River in close proximity to the coal mine operated by the same people. There are only 20 men working in the iron mine at present. There are two furnaces at the iron mine, which are turning out one ton of pig iron per day. This iron is said to be of good quality and is used in the manufacture of implements and utensils of various kinds at Mr. Yao's foundry at Paoking. The ore body is about 3 ft. thick and lies at about a depth of 40 ft. below the surface of the ground. The ore dips at about an angle of 45 degrees.

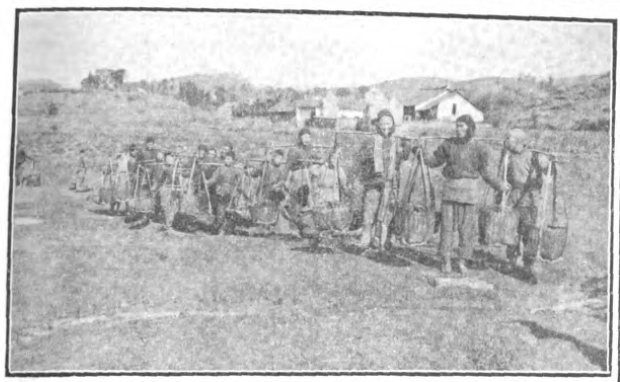
Mr. Yao states that he supplies practically all of the Chinese kettles required in the Province of Kwangsi, in addition to various other articles of iron. These kettles amount to about 6,650 tons of finished product per year.

Shantongtsung Iron Mine

The Shantongtsung mine is located 14 miles northeast of Paoking, and is operated by Mr. L. F. Hur. This is an old mine having been operated for forty years, the present Manager, Mr. Hur, having managed the property since the mine was opened. The mine employs 100 men, of which number 60 men are engaged in the mines, and 40 men are employed in connection with the operation of the furnace. The output of the furnace is two tons of pig iron per day. The mine is located one mile east of the furnace.

There are eight shafts, 300 ft. deep. Ore is encountered 40 ft. below the surface of the ground. The thickness of the ore body is 2½ ft., the dip of the vein being about 45 degrees. The ore body extends for about one-half mile southeast and northwest. Very little water has been encountered in the mine. The ore is carried out in baskets up an inclined shaft about 45 degrees. The size of the shaft is 5 ft. by 6 ft.

There is one large native furnace which burns charcoal. The pig iron is cast in rectangular blocks weighing about 65 lbs. each. It is transported by coolies to Paoking, and sells there for $10 Mex. per ton, and is said to be a first-class quality of iron.



Coolies Carrying Coal to Small Boats near Paoking

Typical Antimony Mine, Longshan. There are Eleven Such Mines in this Locality

Antimony Mines

Fungfo Antimony Mines

The Fungfo antimony mines are located 30 miles north-east of Paoking, high up in the mountains, and about two miles south-east of the little village of Taokingchiao. These mines are approximately 1,700 ft. higher than the village of Taokingchiao. There are four shafts, now producing about two tons of antimony per day. There are 118 men working at present.

The ore body lies 20 ft. from the surface of the ground in the side of the mountain, and the vein is about 6 inches to 1½ feet in thickness. The vein dips into the mountain at about an angle of 60 degrees. These mines have been worked on ten years.

Antimony Mines near Lungshan Mountain

There are other mines 30 miles north-east of Paoking. The ore is smelted in native furnaces at the mines, and the antimony sulphide is cast into small blocks and shipped to Yangchaitai by coolies, a distance of 17 miles. From Yangchaitai the antimony is shipped by boat to Siangsiang and thence to Changsha.

There are ten of these antimony mines in the vicinity of Lungshan, all of which are owned by the same company, and ship their product to Yangchaitai, where the antimony is refined.

Antimony Plant of the Kuangfifo Company

The Kuangfifo Company 43 miles north-east of Paoking, has now completed the first unit of a large plant for the refining of antimony at the town of Yangchaitai, situated on the Lien River, at an expense of $225,000. Work is now in progress on the second unit of the plant. The plant was erected by German engineers, according to German plans and specifications. The work was started one year ago, and the first unit of the plant was completed and placed in operation last December. It appears to be a first class, modern outfit, and compares favorably with the larger plants at Changsha. The plant includes nine large furnaces, one brick stack about 75 ft. high, three antimony channels and two refining furnaces. The furnaces use coke obtained from mines six miles northeast of Yangchaitai, where a very good grade of coking coal is mined. At present, 50 men are employed in the antimony plant.

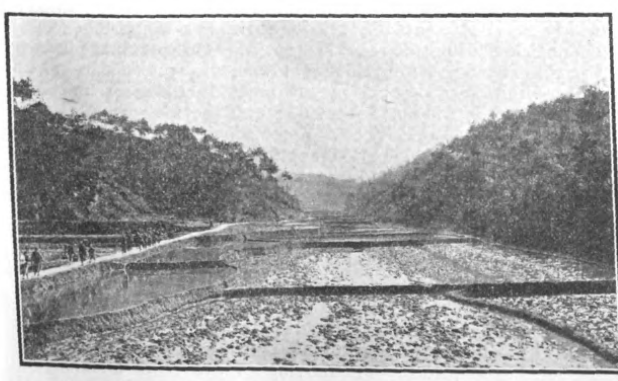
All the output of the ten mines now being operated around Lungshan Mountain is shipped to Yangchaitai, where it is refined, and shipped out in two grades, viz:—antimony regulus, which is about 99 per cent. pure antimony, and antimony sulphide, which is the impure form of antimony. At present this plant is turning out one ton of refined antimony each day, or thirty tons per month; and is handling the entire output from the ten mines at Lungshan Mountain amounting to ten tons per day. Total antimony shipments from this point amount to 1,600 tons per annum.

All of the antimony from this section of the country goes to Changsha where it is shipped out to all parts of the world. It is said that the largest antimony plant in the world is located at Changsha. The present value of antimony regulus is said to be about $375 per ton at Changsha.

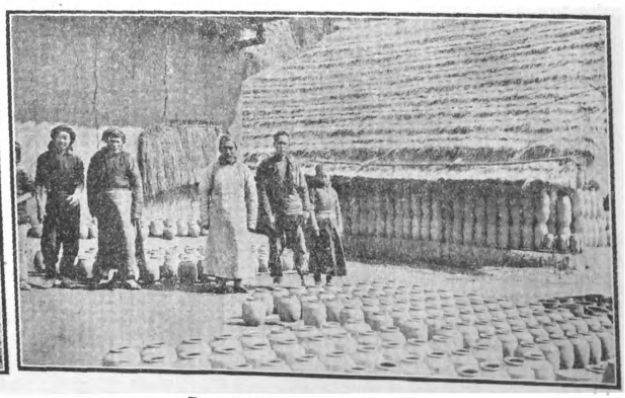
Pottery

Between Ichiawan and Siangtan there are a number of native pottery works and tile and brick plants, which turn out large quantities of bowls, pots, jars and other earthenware, besides tile and bricks.

The clay is of very good quality and the product is likewise good and serviceable, for the most part. Shipments are sent out by boat to various points down the Siang and Yangtze Rivers.



Typical Country between Yungfeng and Paoking



Pottery Works near Siangtan

Looking for a Line

The Siems-Carey Company make a Reconnaissance of the Chowkiakou-Siangyang Routes

In the February issue of the FAR EASTERN REVIEW we gave some general information on the country traversed by the projected railway from Chowkiakou via Yencheng to Siangyangfu, and on up the Han River. Since then engineers have traversed the route as far as Siangyang and their observations add to the definite knowledge of the territory. It has to be explained that the Chinese Government originally allotted to the Siems-Carey Railway and Canal Company a line from Chowkiakou to Siangyang, a total distance of 225 miles, to investigate, and, if found feasible, to construct. Later the Government allotted to them a further section from Siangyang to Hanchungfu, near the headwaters of the Han River. The reconnaissance of the latter section is now being undertaken.

Mr. C. D. Jamieson made a barometric reconnaissance from Chowkiakou to Yencheng (40 miles), from Yencheng to Nanyang (105 miles), and from Nanyangfu to Siangyangfu (80 miles). The first section of forty miles was found to be practically level country, densely populated and quite fertile, but strictly agricultural, of a character to compare favorably with the country passed through by the Peking-Hankow Railway.

The City of Chowkiakou

Chowkiakou is situated on both the north and south sides of the Sha-ho (ho being the Chinese for river), about 36 miles east of Yencheng. It is not a District City and has no Magistrate or other high officials. It consists of two walled towns facing each other on opposite sides of the river, and a third town on the north side west of and adjoining the walled town on that side. The walls parallel to the river are about 400 feet apart. The present low water channel is 220 feet wide with a maximum depth of seven feet. The river banks are some 20 feet above the present low water level and the town walls are 25 feet higher. "The high floods," the residents say, "have in the past come nearly to the top of the banks but have never touched the walls." During the break in the south dyke of the Yellow River in 1887 all the country to the north of the Sha-ho was flooded and the north town of Chowkiakou was surrounded by water, though none entered the city. The population is stated to be over 250,000, and Mr. Jamieson estimates from the crowded streets, number of shops, and area covered that 250,000 is not an over estimate. The streets are narrow with about a nine foot roadway in the north town. The most important are paved with flat stones, but the majority are not paved. There are no carts in this town, transportation being by wheelbarrow and coolies.

There are many long streets lined with small shops, well kept up and busy. There are a few rich families in the three towns—whose farms run from a thousand to three thousand mow or more—and there are several fine large residences within very high walls, well-built two-storey brick houses. The majority of the people are poor, with some of medium wealth, but none look underfed and all are busy. Sanitation is as bad as possible but when there is no epidemic the death rate is not above normal. This year there has been an epidemic of scarlet fever which has been very great. There is one Chinese doctor, educated at a mission hospital, in private practice but no hospital of any kind.

A Vast Wheat Field

As this is the low water season, with no crops in movement, the number of boats in the river is small, but for eight months of the year there are 300 to 500 here loading or unloading, the smaller ones going west to Yencheng, on the Peking-Hankow Railway. The exports of this whole region from Chowkiakou to Yencheng, and the tributary regions, are wheat, hides (cow, goat, sheep, donkey, dog) and sesame seed, from which oil is made. The entire region is put down in winter wheat, and on the road from Yencheng all was wheat as far as one could see. This wheat crop extends north to Peking and beyond, and south to the Yangtsze.

In the area under consideration every foot is cultivated, the other crops come after the reaping of the wheat, the middle and the last of May. The next crop in value is sesame seed, of which train loads are exported for the making of oil. In value of exports the hides approximate the wheat and sesame. No actual figures as to amounts exported were obtainable. In some sections large quantities of strawbraid are made for export. The quality is not number one, but both the quality and the quantity can be vastly increased.

In Chowkiakou there is a large cattle market held on alternate days in the north and south towns. A very large percentage of the surplus agricultural products are now hauled to the railway and much produced to the east of Chowkiakou is brought to that place in boats and is then taken by carts or small boats to the railway for final shipment.

The whole section is densely populated and there would probably be no trouble in obtaining labor for railway construction.

In going from Yencheng to Chowkiakou the main travelled road was followed, measuring the distance with an odometer fastened on one of the cart wheels. In returning to Yencheng the carts went along the road while the surveyor followed the telegraph line.

No Watercourses, Rocks or Fuel

Yencheng to Kweichwang—(30 li—10 miles)—This section is at a higher elevation than the remainder of the distance. It is undulating to some extent, the depressions and ridges running north and south. The rise and fall is so gradual that the appearance under cultivation is a flat country. The ridges are one or two miles apart, and the land appears to fall in the north and probably to the south of the main road. In a country entirely under cultivation with no dry or wet water courses, and with not the least sign of water erosion and a general appearance of flatness, it is hard to judge of the direction of these slight slopes. Just outside the west gate of Kweichwang the land falls with some abruptness but both to the north and south there are slight slopes and ample space for development.

Kweichwang to Taichwang—(30 li—10 miles)—This section is practically flat and there are no difficulties with the exception of finding actually the best line on the ground.

Taichwang to Chowkiakou—(60 li—20 miles)—From Taichwang east for some six miles the country is low and it is so nearly level that at this season there was no visible run-off channels. During the rainy season, June to September inclusive, there is often heavy rainfall, and at times a very excessive amount falls within a short period of time. In these circumstances the section is sodden with water and the main road through it becomes impassable. The produce which must be hauled to the railway and the people travelling from Chowkiakou keep to the north of the Sha-ho and reach a station north of Yencheng. This is not an annual occurrence and to-day every foot of this land is in wheat and there is no sign of any swampy ground, and also no sign of any defined outlet. There are no drainage ditches on the low land. With the exception of this low land the remainder of the distance, 14 miles to Chowkiakou, will give but little trouble. There are slight undulations.

The grades should more or less conform to the general slope from Yencheng to Chowkiakou, and would be regulated by the justifiable expenditure. The moving of graves is unimportant as there are but few graves in this section. The principal cuttings will come in the first ten miles, and the highest embank-

ment in the same section and in the low country east of Taichwang. There is no rock in any part of the railway line, and in no part of the tributary area. Some of the stone used in this area was brought from Siangyangfu district. Bricks now made here are under-burnt and of poor quality, but the clay is good and good bricks are possible. There is no fuel in this section other than straw, etc. The coal comes by rail from mines within a hundred miles of Peking or north of the Yellow River, in the province of Honan.

There will be only two bridges of not more than 150 feet each. There will be, however, quite a number of small openings. To the north of the main road and the telegraph line there are some fifteen miles of dykes. In one or two cases they come within a thousand feet or more of the road, but much of the way are too far north to be seen. The Sha-ho from Yencheng to Chowkiakow has a dyke on its south bank the entire distance.

Walled Towns with Stories

Yencheng has a population of about 430,000. From this city westwards to Liutienchen the distance is 30 li, or ten miles, the country being slightly rolling. The ridges run more or less north and south, and are not continuous, but fall off towards the north and south. The entire section as far as one can see is green with wheat. Six or eight villages are always visible and also many hamlets. Walled villages are a peculiarity of southern Honan and tell of much fighting in the past. The walls form a rectangle with sides from 400 feet to over a mile in length with projecting corner towers at the gates. The walls are built of packed clay and faced with brick on the outside, with a cemented battlement. There is usually a broad, deep moat round the outside filled with water. The roads entering the town cross the moat on a bridge, the abutments of which are brick and the floor of heavy timber resting on two cross beams. This floor and the cross beams have iron rings in them and can be quickly removed in time of trouble. The long walls do not always mean a large number of people on the inside. Some are prosperous with many people and shops; others with few people and often no shops. All of these towns and villages are surrounded by plantations of trees, which are deciduous, excepting round graves. The trees are grown for timber and shade. There are also orchards of peaches, apricots and plums. From any point of view the effect is of being surrounded by tree plantations some near and some far away, as these plantations overlap.

The section passed over as far as Wuchang (21-35 miles) is slightly rolling and is all under cultivation—wheat at that season. Not one visible or active watercourse was met with and there were no signs of water erosion.

From Wuchang the country is a little more rolling, but from the top of a twenty foot wall appears flat. The railway line will probably swing somewhat to the north of the road.

More and More Wheat

The Sha-ho is some ten or twelve miles north of this place. The walled villages are not as numerous, and the whole section is under wheat, and produces sesame, kiaoliang, beans, etc., also cattle, goats and some sheep. After Wuyang the country becomes much more undulating and the soil begins to show a decided loess formation. Several small watercourses were crossed between Wuchang and Wuyang, all being dry, but the flow was north by east, where they must eventually reach the Sha-ho. Three miles west of Shintien there was a dry sandy bed some 500 feet broad with an 80 foot channel, the water being 18 inches deep. The river bed was cut through a loess formation, the sides being nearly vertical and from fifteen to thirty feet high. This river flows to the north, and, in the lower land to the north of the road some two miles, the river was dyked, the dyke bending to the east. The river must go into the Sha-ho. The visible flood marks were only eight feet above the channel bed. The same river was crossed higher up an hour later. There was much less water and it all went through an eight feet opening in a winter bridge. The river bed showed much erosion of the banks. The undulations through this whole line run more or less north and south. They are not continuous, but taper down to the lowland at each end, and are from one to three miles long and a third as wide. They appear alternate and overlap a little. With care in location a low rate of grade will be possible without heavy work.

Four li to the west of Paoanyi a considerable undulation was crossed, which, however, tapered to the lowland less than a mile to the north. Two small streams flowing to the south-west, or south by west, were crossed and the basin of the Pai-ho, Han-ho, and the Yangtsze was reached. The country is loess, and the road is often ten or more feet below the surface. For the last three miles before reaching Yuchow the dyke of the Pai-ho was visible.

Now Some Rivers

The city of Yuhchow is on the south-east side of the river. The wall is in fair repair, and is one mile long on the sides and three-quarters of a mile at the ends. The streets are narrow and crowded with people, barrows, ox-carts, etc., and are lined with open front shops. From Yuhchow to Powang is 19 miles. During the day six rivers flowing south were crossed, three of them join sixteen miles south of Yuhchow near Shechen, and form the Tang-ho, which empties into the Han-ho near Siangyangfu. The other rivers are much smaller and eventually flow into the Tang-ho. Small boats come up the Tang-ho from the Han-ho and Hankow, and considerable wheat from this section thus reaches Hankow. The Chao-ho was crossed 107 miles west of Yuhchow, at a bend where the erosion and the concave sides were most marked. At the point of crossing the bed is over 1000 feet wide, and the west bank, which is being washed away, is 20 feet or more high. On the top is a village which is gradually falling into the river. The present channel is about 100 feet wide, and the water not eighteen inches deep. An examination showed that the usual width of the bed was a little over 500 feet.

From Powang to Nanyangfu—the soil is loess, much cut up by sunken roads, and the country is much less undulating. No water courses are met with until we cross the Pai-ho, seven miles from Nanyangfu. The sandy bed of the Pai-ho is a mile wide, the present channel being 100 feet. The bank is low on the east side and but some ten feet high on the west. There are no dykes.

Mr. Jamieson sums up that from Yencheng to Yuhchow there are but few water courses and possibly no rock work until just east of Yuhchow. The amount of material to be moved would not be excessive, a ruling grade being about 0.5%. From Yuchow to Powang the work would be heavier and some large expensive bridges be necessary. The rock outcrops in a number of places in this twenty miles. From Powang to Nanyangfu there are no bridges and but little indication of rock. To avoid the Yuhchow-Powang section there is a possible line more to the north following the Sha-ho and crossing the divide between it and the Pai-ho in the mountains to the north by west of Nanyang. There is also a possible route down the east side of the Pan-ho to the Tang-ho and thence to the Han-ho, near Siangyangfu. This route would cut out the whole region comprised in a triangle Yuhchow-Nanyangfu-Siangyangfu, and also territory west of the Pai-ho.

At Tashihchow, 16 miles from Nanyangfu, one arm of the Pai-ho turns to the north-east. The bed is 1500 feet wide. There are mountains to west and north, while to the east are isolated peaks and rolling foot hills. Up to the foothills the country was in wheat but then rock cropped out everywhere. There was little soil and over half the land was uncultivated owing to its lack of suitability. Twelve miles east by north of Tashihchow barren foot hills were reached, and the trail crossed a low pass of 760 feet and dropped into a valley with a river bed some 600 feet wide. The present channel was 20 feet wide, the water running to the east. The Chinese called this river the Liu-ho. The river valley extended about seven miles and was from 1000 to 3000 feet wide, the sides being precipitous with but little soil. In flood the valley is never under water, which was indicated by the fact that there are many hamlets which had never been flooded. The visible flood marks on the rocks were only two feet above the present level. The maximum rise would be less than five feet. The foothills to Yuhchow were only

cultivated in the valley parts, and there the soil was poor. From Liuhotien to Tashihchow the route lay along the edge of the range and was through mostly barren country.

Mr. Jamieson's conclusions with regard to this section are that the question of route for a railway is between a line following the road traversed and one following the road to Yuhchowfu and thence south down the valley of the Pai-ho and Tang-ho to the Han river—with no connexion with the Nanyangfu district and the country west of the Pai-ho.

The main road south from Nanyangfu crosses to the east side of the Pai-ho and is well above flood line. The bank of the river is nearly vertical and is somewhat eaten into by the current. The country is very level, not a hill being in sight in any direction, and all is under wheat. Between ten and fifteen miles from Nanyang four small water courses were crossed by stone bridges. Watien is a small, thriving, walled town situated in the midst of a country densely populated and under wheat. The people of the town look healthy and well to do. Many small boats were seen on the river at this place, the majority of which come from Laohokow, on the Han River. Between Laohokow and Nanyangfu, it may be mentioned, there is a good cart road which is used during the entire year. The road crosses no mountains or hills, and the only river is the Teng-ho, at the city of Tung.

From Watien to Hsinyeh the country is flat. The latter city is a walled one, the dimensions being three-quarters by half a mile. It is some two miles from the river channel, well above the flood line. As the surveyors reached the city wall they met their first camel train—of about 100 camels—going north. They came from southern Shansi with salt from the salt wells there, which can be sold at Hsinyeh cheaper than the salt brought from the coast. The salt is exchanged at Hsinyeh for native cloth from Yahkou near Hankow, which is carried to Shansi.

Outside of Hsinyeh the main road crosses to the west side of the Pai-ho, which, as it was traversed, proved to range in depth from four feet to nothing. The bed is from a half mile to two miles in width, the channel meandering back and forth from side to side. The boats draw about fifteen inches of water. The channel is so narrow that one boat grounding would often stop all the boats behind it, as well as all boats coming up, causing much trouble. The current runs about four feet per second at this period of the year. The country is flat, not a hill being visible in any direction. The river bed is cut deep into the plain, the banks being vertical and from ten to twenty feet high. The ordinary high water in May, June, and July is about eight feet above the present surface. During the early spring and summer but little attempt is made to navigate this river. Many of the workmen work in the fields until the floods begin to fall, and the wheat, etc., is ready for market. Then every boat obtainable is in use. No very large boats work on the river, the largest carrying about ten tons. Large numbers of boats were seen going up stream, the smaller and medium sized ones being loaded with long bamboos tied in bundles and lashed to the sides. Many had two or three small logs in tow. A few carried deck and cabin loads of coffin logs sawed to the proper coffin lengths. A few of the larger boats had native cloth from some place near Hankow and a general cargo. Where the Tang-ho, which has its head waters north of Yuhchow, enters the Pai-ho, its mouth is about 350 feet wide at the present level and about eight feet deep. Here it is a placid, clear river flowing between well defined banks, with no erosion and no sand bed. The banks were covered with grass to within two feet of the water's edge. Continuing down the Pai-ho to Fancheng, on the Han River, the country to the east becomes slightly rolling, but without evidence of mountains, hills, water courses or rock. One of the most noticeable features on the river was the absence of fishermen, which may have been due to the state of the water, since Chinese usually fish in all waters and in numberless ways.

The Decline of Fancheng

Commenting upon the effect of modern means of travel upon the city of Fancheng Mr. Jamieson says: Less than forty years ago Fancheng had nearly double her present population and was the most important city in this part of China. The present population is 286,000. It was on the great highway between the north and the south on the navigable rivers, the Han and the Pai, and also the highway to the great northwest and north. Officials, bankers and merchants all went this way. Fancheng and Siangyeng flourished and were cities of sumptuous inns, guild houses and larger merchants. The first change came with the establishment of ocean steamer lines up the coast. A large percentage of officials, merchants and merchandise now travelled by sea and the place deteriorated. But eighteen years ago, when Mr. Jamieson was there, there were many fine inns. In the short "Street of Inns" there were five or six kept in first-class repair and in every way first-class, from a Chinese view-point, as to food and accommodation. Then came the opening of the Peking-Hankow railway, and to-day there are only two miserable, tumble-down inns in the city. The same is true of all towns from Hanyang to this place.

Laohokow, being at the head of navigation on the Han-ho, has increased in importance during these years, as there was less inducement for merchants and exporters to stop at Fancheng.

Mr. Jamieson concludes that from Nanyang to Fancheng the country is such that the railway grade should not reach four-tenths of one per cent. The line should keep to the east side of the Pai-ho, where the work would nearly all be embankment, of ten feet or more. The country is quite densely populated and is entirely under cultivation. The people are fairly well to do for China and all have sufficient to eat and wear.

JAPANESE SMELTERS AT TAYEH IRON FIELDS

According to the Japanese newspaper, *The China Advertiser*, published at Tientsin, blast furnaces are in course of erection at Tayeh, the site on the Yangtsze of the iron ore deposits, and work in this connexion is now advanced. The importance of this enterprise will not be lost upon those who realise how much China stands to lose by not organizing to work her iron into a marketable product. What started as a Chinese concern at Hanyang has already passed under the influence of the Japanese, and unless China bestirs herself while she yet has time she will find that when her industrial development takes place, and when great quantities of iron and steel will then be required, she will be obtaining them from outsiders with little profit to herself. China has been urged time and again to conserve her resources so that she might reap benefit from them, but for some reason that can be explained by nothing else than callous indifference on the part of the authorities to the future, she fritters away important and far-reaching rights instead of taking the steps under responsible guidance to turn them to her own immediate and future advantage. What will happen with her iron deposits unless she is wise in time is foreshadowed by the following:

"The iron foundry at Yawata, Japan, imports ore from Tayeh and engages in the manufacture of iron in their workshops at Kiushu. Finding this inconvenient, however, a plan is set on foot to turn out the metal in China by establishing a foundry at Tayeh. For the purpose a tract of land comprising an area of about 100,000 acres has been leased by the concern on the bank of the Yangtze at a point not far from the Tayeh mines, where 2 smelting furnaces will be erected. At present, 14 Japanese engineers are on the spot and working under the direction of Mr. Oshima, C. E. In view of the fact that the Yangtze overflows its banks at a rate of once in every ten years, the site will be raised 8 feet from the level of the ground. The time when the foundry can be in full working order is expected to be the end of 1919. Preparations are being made with a view of turning out 280,000 tons of pig-iron in a year.

"The annual output of the ore at Tayeh at present totals 600,000 tons, of which 320,000 tons are supplied to Japan and 280,000 tons to the Hanyang Steel Works. But after 3 years the product is expected to be increased to 1½ million tons. It is understood that the supply to Japan will then be increased by 50,000 tons every year, until the supply reaches the maxim amount of 550,000 tons.

"The increase of output requiring the improvement of transportation facilities, preparations are being made to meet the requirement. For the purpose, the most up-to-date locomotives having 1.000 h. p. will be purchased from America, and 10-ton trucks now in use for carrying the ore will be replaced with 40-ton cars worked by compressed air. Had the machinery ordered of England been manufactured on time, the proposed electric power house would have been erected during last year. As it was, however, it will not be completed until the end of next year. It is expected that the Tayeh Iron Works will supply a steel factory to be established at Kiushu, under the joint stock of Chinese and Japanese capitalists, pig-iron to the extent of 60,000 tons per annum."

Consular

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Finance ✻ Commerce

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DR. WU TING FANG
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CHINA'S POSTAL SERVICE
AN IDOL WITH FEET OF CLAY
CHINA'S STRUGGLE FOR CONSTITUTIONAL GOVERNMENT
THE CONSTITUTION WHICH THE TUCHUNS REJECTED
OUTSTANDING NEED IN CHINA
TRICKS OF THE JAPANESE TRADE IN MANCHURIA
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The Romance of Accounts and the Late Commission

[By Ray Ovid Hall, M.A., Principal of the Peking School of Commerce and Finance]

One of the chief causes of the numerous failures of large scale business in China has been the lack of proper accounting. This is especially true in regard to railroads. Kent speaks of a period in Chinese railway history about a decade ago marked by a progressive movement in railway construction led by the Chinese themselves. The disastrous and discouraging downfall of the numerous private and provincial railway companies organized at that time, we learn from reliable sources, may almost invariably be attributed to the lack of proper and serious accounting.

If the Chinese promoters of these companies had only looked well to their accounting methods—if only they had not built their house on the sands, how different might have been the tide of railway affairs since that time.

But China chose to repeat the early history of railway accounting in England and America. The period alluded to characterized itself as one of lazy, thoughtless drift, of criminal blindness and lack of imagination. In America the period ended dramatically in the wholesale failure of railways in 1873. In China the nationalizing of railways promised to prolong the period of drift by stifling competition and enterprise.

The appointing in 1912 of a railway Accountancy Commission by the Ministry of Communications seemed at one time at least to have achieved a result directly contrary to all expectation!

The Bad Old Days

First, as to the Accounts of Construction. Each foreign builder had kept his own books in his own way. His accounts reflected not only the customs in his native land or city, but also the personal notions of his accountant. French, German, British, and Belgian practice had also been varied according to the special contracts under which operations had been conducted. An item charged to "Supervision" to-day might to-morrow be charged to "Track." Some indeed made no classification of disbursements, but merely listed them, mixing ties with quinine, locomotives with pencils, and police with pickaxes, until it was impossible to judge what any unit of finished construction had cost. Small wonder then that on some lines the Government had never made any audit of construction costs at all but had accepted the results as the contractor had left them—"in one black burial blent" (apologies to Byron).

What was true of construction was true also of operation. Yet, supervision of operation is even more important than supervision of construction. Original construction is over in a few years. Operation goes on for ever. With everything left to the foreign accountant, it was naturally very difficult for the Government to protect its interest in profits. Agile indeed would be the mind of the auditor that could skip from one system to another, meet on even terms its accounting officers, speak their language, discover the by-paths of their thinking, and forecast their future digressions.

In failing to prescribe a uniform system of accounts, China probably had been losing money; but she certainly was losing a good opportunity for the legitimate assertion of her rights. A minute's thought will show what a weapon uniform accounting would be when applied to the foreign roads reporting to the Chinese Government. Although the chief technical officers of these roads are nominated by the foreign bondholders, they may be removed for cause by the Government. By comparing the results of different roads as found by uniform accounting methods, the Government might be so enabled to criticize and suggest as to reduce these technical officers virtually to the rank of employees.

Dr. C. C. Wang, the Director of the Peking-Mukden Railway, an Accomplished American Educated Student who Effected Unification of Accounts on the Chinese Railways.

Thus, in assuming statistical control of these railroads built by foreign capital, China would be better enabled to throw off the coils of the sphere of influence. Each line, hitherto the instrument of a foreign nation, becomes welded into a great chain of railways serving China.

Other interesting features were presented by the old railway accounts. Most of the lines were conducting "central mechanical works" which on occasion produced for outsiders as well as for the home line. The accounts of these mechanical works were so mixed with the general accounts of the line that no reliable conclusions could be drawn concerning the efficiency of either the line or the works. Again, the profits of some of the railways were so stated that it was impossible for anyone outside of the office to tell whether the profits resulted from operation or from the sale of lands. But more of this anon.

Not least among the defects of the old methods was the lack of an adequate check on the efficiency of car handling, coal consumption, etc. The trained accountant realizes that the ledger statistics of a railroad are only a part of the grand total that must be collected. In 1910 Mr. Louis D. Brandeis, now of the Supreme Court of the United States, declared in the rate hearings at Washington that the railroads of the country were wasting a million gold dollars a day, and since 1910, the railroads have been compelled by increasing wages and material costs to apply yet greater ingenuity in reducing costs of operation by scientific management. Such success has crowned their efforts that reliable statistics shown in a recent issue of the *Railway Age Gazette* indicate that last year's traffic actually was conducted for $300,000,000 less than would have been required had the operations been no more efficient than in 1910! The Commission for the Unification of Railway Accounts and Statistics had therefore, as one of its principal assignments, the formulation of statistical methods upon which to base a science of railway management in China.

The Accountancy Commission

The Commission that was to frame the much-needed uniform system of accounts and statistics was formed with the greatest care. First there was selected a group of men who had studied accounts and railroading in foreign schools and who had later served for some years in the Ministry of Communications. Joined with them as advisory members of the Commission, were the chief accountants of the various railway lines. Among the latter were men whose knowledge of Chinese conditions was fortified by experience upon the railroads of Belgium, France, Germany, England and India. In all, six nationalities were represented.

As Acting Chairman of the Commission was a former Assistant-Directorof the Peking-

Hankow line, a man of scholarly attainments who had earned the highest degrees given by American universities and who had made a special study of railway matters in several foreign countries—Dr. Ching Chun-wang.

Finally, as culminating evidence of a determination to secure the best results obtainable, there was summoned Dr. Henry C. Adams, a well-known American economist and a teacher of accounting in a leading University. For 20 years Dr. Adams had served as Statistician of the United States Interstate Commerce Commission, and in 1906 he had actually succeeded in framing a Uniform Classification for the many hundred railway companies in the United States now operating more than 250,000 miles of line.

Considering the wealth of data already at the fingertips of the Commissioners, they began by studying carefully all the classifications, blanks, report forms, etc., then in use on Chinese railways. It secured more from Japanese, Indian, and other foreign sources. Two members were detailed for a specialized study of each Chinese line and its practices for a period of three months with instructions as to the classes of data to collect. So assiduously was the object pursued that in the fall of 1913—only seven or eight months after Minister Chu Chi-chien had directed the work to be undertaken—the Commission was ready to assemble again. A series of more than 70 sessions followed. By November 20, 1914, pamphlets of Classifications covering expenditures for Capital Investments, Operating Revenues, and Operating Expenses had been formally issued. Then, by an order of Minister Liang Tung-yen to take effect on January 1, 1915, these classifications actually went into effect—together with specifications for forms of Income Accounts, Profit and Loss Account, and Balance Sheet; and rules for the compiling of mileage statistics.

Probably no one would claim the work of the Commission to be absolutely ideal. Nevertheless, the classifications and forms are adequate in that they are based on reasonable practice and provide for uniformity. The *Railway Gazette* (July 9, 1915) paid its tribute in the following terms, "We conceive the classifications to be ahead of British practice." Had the classifications been properly enforced, the order of January 1, 1915 would have transformed the Chinese Government Railways from an aggregation to a system.

Adequately to describe the classifications or to state the philosophy underlying them would require a volume. Still a brief statement of their structure and their functions may be helpful.

The Classification of Capital

Expenditures (1) is designed to show the cost of the different parts of a railroad at the time the builder hands it over to the Ministry of Communications for operation. The classification recognizes 18 main classes of costs in building the physical structure of a railroad, each of which is sub-divided sufficiently to prevent mixing up items which are of very different nature. Among the more important of these 18 main heads are, Land, Formation, Tunnels, Bridges, Track, Buildings, Rolling Stock.

(1) Capital expenditures are those that increase the value of plant and equipment: revenue expenditure, or "operating expenses," are items that must be deducted from income, or if income be insufficient, from proprietorship. Floating Equipment, and General Expenditures—the last named comprising the salaries of officers and clerks and other supervisory costs.

But a railroad is never built. As soon as it begins to be useful, merchants want spur tracks to their godowns. As business increases, need arises for side tracks and additional stations and for more cars, or perhaps heavier rails. Hence, "capital expenditure" continues—even after the line is open from end to end. In adjustment to these conditions, there was framed a classification of additions and betterments similar to the classification just described. By adhering to this classification, it is possible to know at the end of any year or month just what it has cost to build a given railroad to date.

In making the Classification of Operating Revenues the method employed was to determine and group the numerous distinct services by which Chinese railroads earn money. There were found to be nearly 50 different classes of service. Yet it is convenient to group these 50 classes under two heads: Transportation Revenue and Other Operating Revenue. There are five groups under the former, which with appropriate titles, category, the earnings from carrying passengers; from carrying baggage and parcels; from carrying "goods; from shunting, demurrage, etc.; and from conducting ferries. "Other Operating Revenue" categories in a similar manner earnings from railway telegraphs, brickworks, hotels, mechanical plants, interchange of rolling stock, etc.

The Classification of Operating Expenses provides an analytical record of the cost of rendering the services above stated. Its five main heads are: (1) General Expenses, (2) Traffic Expenses, (3) Running Expenses, (4) Maintenance of Equipment, (5) Maintenance of Road and Structures. It sorts and subdivides until it is fair to say that only things of the same kind are tied up in the same package.

The *first* of these main heads covers the expense of supervising and policing the railroad as a whole. The salaries of the general manager, his clerk, the accounting force, medical officers, police officers, and the cost of the necessary supplies come under this head.

The *second* head covers the expense of securing business, of loading it aboard the cars, and of unloading it. It includes the salaries and supplies of the Traffic Manager, his assistants, station managers and station clerks and labourers.

The *third* head covers the cost of actually hauling the traffic of various kinds. The principal items covered are the wages of engine drivers, firemen, and trainmen; fuel, water, and lubricants for the locomotives; and other similar items.

The *fourth* head covers the cost of keeping locomotives, carriages, and waggons in repair, and provides a depreciation fund for their replacement when worn out.

The *fifth* head covers the cost of keeping up the roadbed, track, bridges, tunnels, buildings, etc.

Cost Accounting

These five heads are seen to recognize the well-known cost accounting principle of differentiating sharply between overhead and departmental expenses. (Overhead, or burden, is that group of expenses which does not increase with the increase of the units of goods or services produced.) Without a separation of overhead from departmental expenses, the managers of an enterprise cannot know, even in a general way, whether or not its advertising and soliciting are properly exploited. Let us illustrate the principle. The total cost of manufacturing a hat is $2 in all. Seventy-five cents of this sum is overhead—the proportionate part of the president's salary, of renting the factory, etc., items which must be paid anyway. The total expense directly incurred by producing one additional hat is only $1.25. The selling price of the hat is $2.40. With these figures it is evident that gain is made by the factory from any additional advertising that sells additional hats provided the cost of such advertising is less than $1.15 for each hat thus sold. The principle involved is one which the modern administrator perceived to be applicable to insurance companies, schools, and banks as well as to railroads. Unfortunately, however, it has not been properly applied to Chinese railroads; for I recently learned of a South China line that is losing money, though operating on a very low ratio.

By separating the overhead from the departmental expenses according to the heads and subheads mentioned above, it is possible for the officers to learn whether or not the various rates and fares are remunerative. The problem of rate-fixing, the subject of numerous published volumes, is knotty at best: without accurate cost data it resolves itself into the blandest guessing.

But departmental expenses are indispensable to the modern administrator for other reasons. By their use he can keep himself informed as to the diligence and skill of his subordinates. Careful classifications, if enforced, must prove a powerful deterrent to dishonesty. Such a deterrent is needed not only in China but in every place where the servant is not under the eye of the master. Dishonesty must affect either revenues or expenses by unduly lowering the one or raising the other. Such a result can be detected, if the classification be enforced, and immediately convict the responsible employee or officer of one of two things—incompetence or dishonesty. If it is incompetence, the unfortunate employee may be reduced in rank. If it is dishonesty, he should be dismissed and punished for theft.

Reports

As a cap sheaf to its work, the Accountancy Commission drew up the form of an annual report by each railway exhibiting the results of the year's operations as seen in its ledger. If the accounts have been properly audited, these reports would be of service to an honest, efficient Minister in following the activities of the various railway managers. And, to go a step farther, when the results are made public—and this is done in all enlightened countries—all citizens interested may form a similar opinion concerning the energy and ability with which the Ministry of Communications holds the officers to account. In the last analysis, the Chinese Government Railways belong to the Chinese people. The real owners have a

right to know, and should be encouraged to learn, how their property is being used and with what results; what its condition is; whether it is losing or making money; what bills are owing to it; and what debts it has yet to pay.

So far one such report has been made—an experimental document covering operations during the first half of 1915. This Preliminary Report promised a second, covering the remaining months of 1915, after which it is logical to suppose that annual or semi-annual reports will follow. Yet, 1917 is now well advanced and no second report has appeared. Whether the monarchy troubles and the late reorganization of the Ministry of Communications have merely delayed the report, or have strangled the infant in its cradle, remains to be surmised.

The interest taken in China's railroads is well attested by the fact that the issue of the first report, just referred to, is already exhausted. The report conveys this happy impression, at least, namely, that as a whole the railways of China are a paying proposition. To advertise the idea far and wide is a sufficient purpose for such reports; since obviously China needs 50 times its present railway mileage. A still greater advertising value attaches to such reports from the fact that they are notice to the world that, in one more respect, China henceforth measures her achievements by modern methods.

To get full value from the reports, the work must be continued with redoubled energy. The preliminary Report is full of crudities. It admits the fault. These errors and inconsistencies are inevitable in pioneer work and will accordingly be forgiven. But if succeeding reports do not eliminate these glaring discrepancies, the Ministry of Communications will stand convicted, absolutely, of a return to the spirit of the Manchus—paper promises and paper fulfilment.

Enforcement

From all this, it is clear that classification of revenues and expenditures is neither self-interpreting nor self-enforcing. To prevent mistaken or fraudulent misapplications of the accounting rules, the Ministry of Communications evidently must provide a small group of men who shall keep under "continuous audit" the accounts of every line. It has been suggested that sending one group of auditors to one line and similar groups to other lines will accomplish but little, and that relatively small gain will accrue from changing the groups about from year to year. Under such conditions a similar variety of personal view might obtain as now exists. To secure strict observance and uniformity, the same group of men must make the examinations of all the roads year after year. Such a force was insisted upon as indispensable by Dr. Adams, out of the fullness of his 25 years of American experience.

The expense of the auditing force would be negligible. Consider a varying of the interpretation of rules about repairs and depreciation which would arise from one serious wreck might so affect the profits distributed to foreign bondholders and consequently lost by the Government, as to defray the annual expense of an Examining Board. The Ministry of Finance has been attempting to check matters of this kind by conducting casual examinations from time to time. When the Ministry of Communications demonstrates its competence to ensure proper accounting, the Ministry of Finance may save the Government this duplicate expense.—*China Supplement to the N.-C. Daily News.*

JAPAN'S BUDGET FOR 1917-1918

The Japanese Government's rough outline of the General and Colonial Budgets for the year 1917/18 estimates the revenue for the coming year is as follows:—

Items	Figures for the year	Figures for the preceding year
Ordinary	549,805,392	531,793,152
Extraordinary	54,254,475	69,145,245
Total	604,059,868	600,938,397

Thus there is an increase by 3,121,471 yen over the preceding year. In the extraordinary revenue there are the following items included:—

Items	The year's figures	Figures for the preceding year
Ordinary	38,623,691	44,707,486
Balance brought over	15,630,785	24,437,759
Repletion of munitions	2,117,991	5,308,062
Others	13,512,704	19,129,697

The year's appropriations are as follows:—

Items	The year's figures	Figures for the preceding year
Ordinary	439,318,673	397,756,609
Extraordinary	164,741,195	204,506,363
Total	604,059,868	602,262,972

The appropriations are assigned to the different departments as follows:—

Items	Ordinary	Extraordinary
Civil list	4,500,000	—
Foreign Office	4,476,216	2,224,660
Home Office	13,448,470	40,746,025
Finance Department	185,532,495	5,761,569
War Office	80,199,567	20,496,803
Navy Department.	49,907,296	56,725,644
Department of Justice	12,279,951	745,589
Department of Education	9,880,630	1,529,931
Department of Agriculture and Commerce	7,552,673	15,057,883
Department of Communications	71,252,375	21,453,091

In all these figures there is an increase more or less except in the extraordinary appropriations for the Foreign Office, the Finance Department, and the Department of Justice.

Many new demands from the different departments are, as may be judged from the increase recorded in the above figures, registered in the new Budget, the following being only the more prominent of them:—

	Yen
Creation of the Bureau of Justice	25,900
Establishment of new Consulates at Chengtu and Yunnan	68,044
Creation of Trade Commissioners	50,153
Creation of school inspectors	78,448
Increase in interest on deposits	4,102,404
Increase in drawbacks paid	1,828,002
Increase in national loans refunded	20,000,000
Increase in reserve funds in the Treasury	5,000,000

Here it must be noted that the Government will resort to a makeshift of temporarily increasing or restoring the refundment of indebtedness to the original amount while the plan of the foregoing Cabinet to increase the Treasury reserve to avoid arbitrary appropriations is followed.

The War Office

	Yen
Creation of machine-gun corps	43,072
Extension of special corps	145,598
Increased appropriations for Chosen Divisions	561,244
Creation of new ordnance works	3,000,000
Increased appropriations for the Flying Corps	188,208
Appropriations for the Automobile Corps	150,000

The Navy Department

Construction of new warships	14,329,208
Repairs to warships	1,508,112
Construction of miscellaneous ships	500,000
Appropriations for new warships	3,000,000

The total appropriations for the construction of new warships are 260,641,793 yen spreading from 1917 to 1923 and it must be noted that, beside this, the appropriations previously decided upon will be defrayed each year.

The Department of Education

	Yen
Extension to the various technical schools and universities	414,237
Creation of two technical schools	108,000

The Department of Agriculture and Commerce

Investigations of seas	34,708
Creation of a weaving mill in the Raw Silk Conditioning House	11,900
Extension to the Iron Foundry	1,385,450

The Department of Communications

Increased bounties for shipbuilding	2,409,280
Increased installation of telephone	2,500,000
Shipsurveyors stationed at Hongkong	15,062
A Loadline Law to be drafted	6,418

Regarding the loan policy for the coming year the official statement goes on to say that 139,587,861 yen will be appropriated out of the General Account as Sinking Fund, but the actual redemption of loans will be effected to the value of 50,000,000 yen. As the result of this increase in the loan refundment, the Railway Board will have to borrow 21,860,000 yen. Beside the following loans have to be floated during the coming year:—

	Yen
Chosen Industrial Loan	13,070,963
Taiwan Industrial Loan	3,360,000
Loan for the purpose of converting foreign loans	30,000,000
The Railway Board loan for the conversion of old loans	40,000,000
Chosen Debentures converted	30,000,000

Thus the sinking fund is restored to the original amount, but for that new loans have to be floated, as may be seen from the foregoing. Besides, Treasury bills to the extent of 50,000,000 yen will be issued if necessary.

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Chefoo-Weihsien Railway.—Natives of Shantung province residing at Peking have expressed their intention to invest $2,000,000 in the Chefoo-Weihsien Railway project, and the Government's willingness to interest itself privately in the scheme in a financial way has been announced. Chairman of the Chefoo Chinese Guild and two others are in Peking urging quick action. At a mass meeting held at the Chefoo Chinese Guild subscriptions to the amount of $1,700,000 were raised. According to the rulings of the Communications Office, permission for such construction scheme is conditional on the possession by the applicants of the two-tenths of the total funds and as $12,000,000 is estimated for the purpose. $3,400,000 must be held in cash in order to secure the desired permission. The Guild has not raised the full amount as yet.

Changchun-Nungan Light Railway.—The scheme to lay a light rail line between Changchun and Nungan has made good headway. Mr. Li Hsi-lien, one of the most influential Chinese at Nungan, visited Kirin recently and reported the plan in detail to Gov. Kuo. An office has been opened at Kirin, and the shares of the new company have been opened to subscriptions.

Shihpingkai - Chengchiatun Railway.—The construction work of the Shihpingkai-Chengchiatun Railway has been progressing favourably, and more than half the earthwork between Shihpingkai and Pamiencheng has been finished. As the rails are laid down, the operation of construction trains has made it necessary for the management to approach the S. M. R. Co. for the loan of locomotives and goods cars. The laying of rails has been finished from Shihpingkai to Old Shihpingkai about 6 miles west. By the advent of the rainy season, the work will be extended to Pamiencheng, about 10 miles farther west. Bridge-building over the Liao has been pushed with commendable energy, and the temporary bridge is expected to be completed before the rail head reaches it. From present indications, the whole line will be ready for operation before the end of this year. The Shihpingkai-Pamiencheng Section will be opened to business by September.

Extension of Kirin-Changchun Railway.—The extension of the Kirin-Changchun Railway to Yenchi (Chientao) was brought on the tapis and planned under the defunct Manchu Dynasty but had to be given up owing to lack of funds. Lately a marked economical growth has been observed in those out-of-the-way regions, and the absence of modern means of conveyance has been brought home to the authorities more forcibly. The Peking Government is said to be eager to secure an early construction of the proposed extension and the Governor of Kirin has been telegraphically instructed to survey the topographical contours of the proposed route and submit the same.

Shantung Railway Receipts.—The traffic receipts of the Shantung Railway for six months from December to May ranged between Y160,000 and Y200,000 per month. The aggregate receipts of the Railway including the colliery receipts, etc., are expected to exceed Y5,000,000 before the end of summer although the traffic is usually much less then.

Canton Tramway Scheme.—Mr. T. R. E. McInnes, an engineer who is surveying the Canton city wall with a view to the establishment of a tramway line after the removal of the wall, is reported to have suggested to the local Government that two months' time and at least a thousand labourers will be required to pull down the east and west section. The Government believes that now is the time to do the work when soldiers are being discharged and these unemployed former soldiers may be organized into bands to pull down the wall. The use of discharged soldiers for this kind of work was attempted immediately after the first revolution, but was not a success, the discharged soldiers not taking kindly to regular work.

Shahokou Shops of S. M. Railway.—The South-Manchuria Railway Workshops, Shahokou, have many orders from other than the S. M. R. Co. Messrs. Suzuki and Co. have ordered all the machinery for equipping their new bean oil extracting plants at Shimizu (Shizuoka) and Yokohama on a similar design to their mill at Jijiko, Dairen, bought from the S. M. R. Co. This piece of work will be finished in about a month's time. The installation for the second smelting furnace for the Penchihu Colliery and Mining Co. was intended to be completed by about July next, but the importation of necessary material from the United States has become slower since the German-American diplomatic rupture, and the completion of the work may be more or less delayed. It is said that the Workshops have also closed with the Chosen Railway for the construction of eight railway locomotives, although no formal agreement has yet been signed.

The machinery, smelting furnace, etc., for the new Anshanshan Steel Works claim the most urgent attention of the Workshops people. Six electric tram cars for Fushun Collieries are also under construction.

As things stand, the Workshops are unable to accept any fresh orders from outside. Sundry materials, especially steel, are imported from the United States, but the American works are busily occupied with a torrent of Government orders and none of them will accept any orders other than conditionally, leaving the date of delivery open.

Freight Stopped on Trans-Siberian Railway.—Advices received early in June say that an interruption of Trans-Siberian Railway Traffic took place on the Tomsk Railway extending about 400 miles between Novo Nicolaievsk and Irkoutsk. The forwarding of goods from the interrupted section was discontinued, but the passenger traffic went on as usual.

S. Manchurian Capital Increase.—The South Manchuria Railway Company has decided to increase its capital by 20,000,000 yen. This step was recommended to the shareholders at an annual meeting held on the premises of the Teikoku Railway Association, Marunouchi, when the business report for 1916 and the plans for the distribution of the year's surplus profit were presented. The company has planned many new undertakings and increases in expenditure consequently amount to 18,000,000 yen. The present scheme for the increase in the company's capital was drawn up to make good a shortage in the company's resources. The increase in the capital will be made by the issue of 200,000 new shares representing 20,000,000 yen to the original shareholders of the company registered in the shareholders' list on September 1 at the rate of one new share to every three of old shares. The shareholders subscribing to the new shares are required to send in their applications by September 18.

The total income of the South Manchuria Railway in 1916 was estimated at Y. 27,769,311 which, when compared to the previous year, is an increase of Y3,875,007. The present mileage of the railway is given at 687 miles and the average income per mile per day was Y.110 71 an increase 17 sen over the preceding year. The passenger income was Y. 6,112,969 for the transportation of 4,320,239 head. Freight carriage of 6,226,180 tons brought in Y19,869,432. The warehouse earnings were Y325,092 and from other items a sum of Y.1,461.901 was received.

Freight Congestion in Japan.—The Government railway authorities are still confronted with an immense accumulation of goods awaiting transport at all the stations. For some time past the railway authorities have been enforcing a restriction on the amount of goods receivable for transportation, but despite the fact that every possible effort is being made for the reduction of the goods they go on increasing.

At the end of last year the total amount of goods at the Government railway stations was returned at 285,420 tons, but since then the accumulation has continued, and on June 10 the total reached 463,130 tons. Lately the number of applications to the railway authorities forwarding goods has greatly increased as the raw silk season and the time for the planting of rice shoots are approaching. The Railway Board is said to be endeavouring to devise means of meeting the requirements of the situation, though this is not very easy considering that the maximum transportation capacity of the Government railways is not much more than 130,000 tons a month.

Mr. Hasegawa, superintending engineer of the Railway Board, referring to this matter, remarks that the chief cause of the enormous increase in railway freight must be attributed to the scarcity of hold space and the consequent rise in freight, much of what has hitherto been carried on ships being now collected on the railways. The railway authorities are doing their best to build goods trucks and locomotive engines so as to increase the transport capacity, but on account of the short supply of iron and other materials, the building of locomotives and trucks cannot proceed as quickly as desired.

This, of course, suggests that the railways, like the telephones, are undercapitalised. It is noteworthy that just as there is an attempt to restrict the use of the telephone, so the Railway Bureau is attempting to restrict the use of the railway for carrying goods. The necessity of supplementing the railways, either by road-borne motor traffic or by other means, is becoming more pressing every day.

Subways for Tokyo.—Greater Tokyo will be surrounded with subway lines, when the following plans are carried out: The Ikegami Electric Railway Company, capitalized at 400,000 yen, will connect Amori Station on

the Railway Board line to the Meguro terminus of the street car line, covering 7 miles, by way of Ikegumi and Chofumura on the banks of the Tama. Travel facilities will be increased to workers of factories at Komatsugawa or Kameido beyond the Sumida, when the 5 mile line between Kameido and Matsuemura, starting from the Kinshibori terminus of the city tram line, now under construction by the Goto Electric Railway Company, is completed at the end of June. The construction of the proposed line along the River Edo, between Matsuemura and Shinkawaguchi, is to be commenced early in July, 1917. The extension of the Oji Electric Railway line from Otsuka to Shinjuku via Zoshigaya is planned. Another line from Shinjuku to Horinouchi via Nakano is also in contemplation.

S. M. R. to Operate Chosen Line.—The Chosen Railway is to be transferred to the management of the South Manchuria Railway Co. on August 1st at an appraised value of Y146,700,000 inclusive of Y97,000,000 invested hitherto for the construction and improvement of the Lines. In the Supplementary Budget for presentation to the forthcoming session of the Diet, the receipts of the Chosen Railway amounting to Y11,634,990 will be included in the receipts of the S.M.R. Co. and the railway operating expenditures amounting to Y8,954,991, as a new disbursement item of that Company. The railway improvement expenditure amounting to Y9,420,000 is to be borne between the National Treasury and the South Manchuria Company. From a legal point of view, the Chosen Railways are included in the nationalized railways and have been treated quite differently from the S.M.R. Lines, but are amenable to the Railway Nationalization Law. The annexation of the Railways to the S. M. Railways seemed to require a revision of the law subject to the endorsement of the forthcoming extraordinary session of Parliament.

Some sections of the shareholders of the South Manchuria Railway Company are secretly organizing an opposition to the Government scheme of combining the company with the Chosen Government Railways. Those people apparently maintain that the Chosen Government has been losing since opening to traffic. If the railways be combined with the South Manchuria Railway Company the latter will have to bear the accumulating losses. They further say that the Government motive in devising this scheme is to transfer the loss to the company.

According to the unofficial statement of Mr. Shoda (Minister of Finance) at a reception given at the Premier's official residence to the representatives of the different groups in both Houses of the Imperial Diet, an appropriation of Y800,000 for the unification of the railways in South Manchuria and Chosen is to be submitted to the forthcoming extraordinary session of the Imperial Diet as part of the Supplementary Budget for the current fiscal year.

Chinese Eastern Railway to Japan.—According to a statement of the authorities of the Japanese Office, the negotiations between the Russian and Japanese Governments on the proposed transfer of the southern half of the Harbin-Kwanchengtzu Section of the Chinese Eastern Railway are in fair progress and the appraisal of the Section is the only question left on the tapis.

Canton-Hankow Line Reaches Yochow.—It is reported that the large iron bridge on the Puchi and Yochow section of the Canton-Hankow Railway has been completed. Dr. Yen, the Managing Director of the railway, has given instructions to the Traffic Superintendent to have the necessary arrangements made for the opening of passenger traffic from Wuchang to Yochow which will be done before long.

Japanese Tramway to Dig Canal.—The Keihin Electric Tramway Company, which runs between Shinagawa and Kanagawa, has announced that it will shortly start excavating a canal between Kawasaki and Tsurumi. The length of the canal is to be 8,100 feet. The company has purchased ground covering 300,000 *tsubo* along the sides of the proposed canal for 1,000,000 yen and will rent the grounds on both sides for any industrial undertakings and thus make a new industrial centre.

New Railway Projects in Russia.—M. Claude Anet, telegraphing from Petrograd to the "*Petit Parisien*" says that the Russian Government has elaborated a big project for the development of the Russian and Siberian lines. This new scheme contemplates the construction of an additional 40,000 miles of railway, the plan of construction covering a distance of 4,000 miles per annum over a period of ten years. In connexion with this scheme the creation of several large Government iron foundries and special training establishments will be necessary. Parallel with the canals and existing roads the Government will construct a number of bridges and new highways. The execution of this work will be commenced immediately after the declaration of peace. Russia will emerge in a transformed condition, and will be able to cope with the great Western Powers in the matter of equipment. The project has been taken from the Ministry of Ways and Communications, and is now under the consideration of the Ministry of Finance.

Salt Road for Szechwan.—It is reported that steps are being taken for the building of a narrow gauge railway, from the salt wells at Tzeliutsing to Tengtsingkuan, the outlet for the salt on the river. Permission for the building of the line has been granted by Peking. There is also talk of reviving the Szechwan railway scheme. Representatives have been appointed from this city to discuss the matter. The proposal now is, to build first at this end, from Chungking to Chengtu, which offers few engineering difficulties, leaving the more expensive part from Ichang through the gorges for a later generation.

SHIPPING

Japanese Freight Rates.—Owing to the soaring flight of the charter market, especially on the trans-Pacific service, which reached Y30 per ton some days ago, the steamer freights also are flying up. The M. B. K. chartered steamer *Yuki Maru* (4,500 tons d.w.) which was scheduled to sail from Japan on the 8th inst., decided to charge G. $42 for freight rate, as against G. $23 of the N. Y. K. s.s. *Kaifuku Maru* and G. $25 of the O. S. K. s. s. *Shinho Maru*, which departed recently. Plenty of cargo was booked at the advanced rates.

New Pier for Lungkou.—Mr. Yang-hsing the new superintendent of the International Settlement Office of Lungkou has planned to build a pier. Surveys have been made and the funds required are put at Yen 150,000. The new pier is to be maintained by the Chinese Guild. It will be built of wood.

Proposed Russo-Japanese S. S. Co.—On the assumption that the best means to cement the Russo-Japanese commercial relations after the restoration of peace is to inaugurate direct trade between Japan and Southern Russia including the Black Sea coast, which is densely populated and richly endowed, by opening a direct steamer service between Japan and the port of Odessa, the Vice-Chairman of the South Russian Commercial and Industrial Association is said to have proposed to the Russo-Japanese Association, Tokyo, to the following effect:—

To establish a special steamship company under joint Russo-Japanese management with a capital of not less than 20,000,000 roubles to be borne by both sides in equal shares in order to connect Japan and Southern Russia via Odessa. The above company will engage in dealings in goods in addition to shipping business. The proposal is now reported to be under consideration among the interested parties in Japan. Some suggest that it may be better to induce the N. Y. K. to take up the service under Government subsidy, and that the frequent despatch of steamers as occasions may require will suffice as there used to be little return cargo before the War.

Mitsubishi Launches Freighter.—The steamer Calcutta Maru, built to the order of the Nippon Yusen Kaisha, was successfully launched at the Mitsu Bishi Dockyard, Nagasaki, on June 7. The Calcutta Maru is a freight steamer of 5,150 tons and will be employed in the Company's trans-Pacific service. On the 6th inst. the Daifuku Maru No. 6 (7,500 tons, one of the stock-boats of the Kawasaki Dockyard Company) was launched from the Company's yard, Kobe. It was sold to a British company in London.

China Mail Buys New Steamer.—The Shanghai office of the China Mail Steamship Company has received official advices from the San Francisco office of the purchase of the former Pacific Coast Steamship Company's steamer Congress. The contract has been let to the Seattle Construction and Drydock Company for the reconstruction of the steamer and the ship will be ready for service about November 1. This vessel was built in 1913, is 442 feet long, 55 feet beam, double bottom throughout, 7,985 tons gross, 4,912 tons net, displacement 13,800 tons. It has twin screws, uses oil fuel and makes 16 knots. As reconstructed, it will have a passenger capacity of approximately 120 Cabin, 100 second class and 500 Asiatics and will be modern and up to date in every respect, and will carry approximately 4,200 tons of cargo. It is proposed after re-construction when the vessel takes the water at Seattle to rename it the "Nanking."

Britain's Big Ship Order to Japan.—A big order has been received recently by the Kawasaki Dockyard Company of Kobe from Great Britain. The total value of the ships ordered amounts to more than 50,000,000 yen.

The present order consists of 14 freighters, the tonnage of which ranges between 9,000 tons and 12,000 tons. The total value of these ships will be about 50,000,000 yen. The British buyer will pay 40,000,000 yen in cash and 10,000,000 yen in either British or Japanese securities, while the yard will deliver these ships one after another on their completion.

Mr. Kawasaki, vice-president of the dock, is now in Kokura and among his party there are several engineers who will select a site for a branch yard at that town.

Shanghai's Shipping Falling Off.—The Returns of Trade issued by the Chinese Maritime Customs, show that there has been a serious falling off in the tonnage of both ocean going and river steamers calling at Shanghai as compared with the first quarter last year, while sailing vessels of foreign type increased from 39 (7,037 tons) to 88 (26,322 tons). Last year 1,748 ocean going steamers of a total tonnage of 3,032,697 called at Shanghai; this year the figures were 1,596 and 2,733,947 tons. Great Britain continues to hold the place of honour, 546 vessels of 1,041,576 aggregate tons, Japan being next with 555 ships with a total tonnage of 930,903. France, Russia and America coming next with

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THE FAR EASTERN REVIEW

遠東時報

SHANGHAI · PEKING · MANILA

Vol. XIII., No. 15 August, 1917

GENERAL CHANG HSUN

A DOZEN DAYS ON THE DRAGON THRONE

CHANG HSUN—THE RESTORER OF THE MANCHUS

OLD VS. THE NEW CHINA

TAMING THE YANGTZE DRAGON

WHAT DOES JAPAN WANT

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THE FAR EASTERN REVIEW

COMMERCE :-: ENGINEERING :-: FINANCE

VOL. XIII. SHANGHAI, AUGUST, 1917 No. 15

A Dozen Days On The Dragon Throne

The Notorious Chang Hsun Caters to the Gaiety of Nations by taking the Boy Emperor of China from his Bed, setting him upon a Hard and Uncomfortable Throne to Rule over the Resurrected Celestial Empire, and Nonchalantly Overturning the Republic. Only the Smoking Ruins of his House Remained on the Thirteenth Day to Mark the Lair of the Dictator.

On the 13th day of the 5th Chinese month, this being the 1st of July, the Manchu Emperor Hsuan Tung, who is 13 years of age according to Chinese reckoning, was reseated on the throne of his fathers by the notorious and irrepressible Chang Hsun, commander of the equally notorious "pig-tailed" army, and one day under the 13th day of his short reign, Hsuan Tung's regime automatically came to an end with the internment of Chang Hsun in the Legation Quarter, the surrender of the pig-tailed troops, and the triumphal entry into Peking of a large Republican army accompanied by what are best described as lavish displays of fireworks. The coincidental appearance of the figure 13 in this short summary of a most spectacular two weeks may be of interest to those who have a superstitious respect for this persistent 20th century hoodoo, and at all events it adds an extra touch of piquancy to what has been throughout nothing more than an *opera bouffe*, a diverting farce, which, while it got very much upon the nerves of the Peking populace from time to time, was recognized from the moment of its inception to the moment of its noisy climax as nothing but a passing diversion.

It would be unfair to the promoters of the restoration movement, however, to imply that they entered upon their *coup d'etat* with no more serious purpose than that of providing amusement for the Peking proletariat, the foreign residents in China, and the Chinese people at large. As a matter of fact they were so serious that at this very moment they cannot see anything amusing in the collective episodes, but like all fanatical loyalists who devote themselves to causes which time and progress have converted into anachronisms, they interpret their failure to the general degeneracy of human kind, especially the Chinese kind, the death of chivalry, and the abandonment of honour.

THE DRAGON FLAGS IN A PEKING STREET WHICH FIRST APPRISED THE PEOPLE THAT CHANG HSUN HAD RESTORED THE BOY EMPEROR

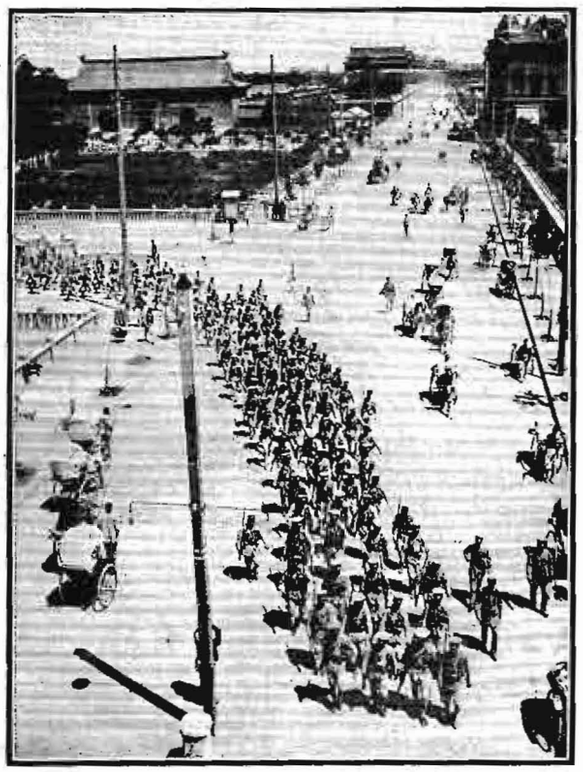
The restoration movement virtually began as soon as the Manchu authority was given for the establishment of the Republic of China on February 12, 1912. It was largely a conspiracy of the ancients. Among them were the Manchus who hated the new democracy because it robbed them of their honours, offices, dignities, positions of profit and graft, and their special allowances. There were also the Chinese, old officials for the most part, of a conservative turn who were simply opposed to change and who believed, as all the Chinese did a generation ago, that the ancient institutions preserved under an Imperial form of government, Manchu or otherwise, were the only ones suited to the Chinese people.

Then there were those who, out of a spirit of loyalty and gratitude to the Manchu Imperial family, under which they had risen from low stations in life to positions of great trust and power, ignored all questions of political advantage under either the Empire or the Republic and were frankly royalists.

Last of all there were the economic philosophers who, while believing in democracy, did not believe that the Republican form was as yet sufficiently understood by the Chinese people and were in favour of maintaining a hereditary head to the government until the principles of representative government were understood. The men of this latter class, of which Kang

Yu-wei, Liang Chi-chao, and Yang Tu, were at one time representative exponents, divided themselves at the time of Yuan Shih-kai's abortive attempt to crown himself between Manchu supporters and Yuan men, but for the most part they were reconcilable to any reasonable monarchical system under any reasonable head.

These various groups worked together in Shantung, in Fengtien, in Tientsin, in Japan, and in Shanghai, with more or less harmony for more than five years, planning, conspiring, advancing when the season seemed opportune and when the Republic at its moments of turmoil seemed about to resolve itself into chaos, and retreating when the struggling democracy showed a tendency to struggle on, always enlisting recruits from the ranks of disgusted and disgruntled republicans, coaxing in the old conservatives, feeling for foreign support—German



Republican Troops Marching Out of Peking a Few Days Before the Attack.

in the second year of the Republic and Japanese a little later—using foreign adventurers as agents and messengers, and always relying, with a great faith in his fanatical gratitude and loyalty to the Manchu House, upon General Chang Hsun as their military champion.

In those days, when approached by Sheng Yun, Kung Wang, Kang Yu-wei, and other leaders of the various factions for prompt action in seasons of Republican weakness, Chang Hsun said: "It is too great a risk. We must wait a little longer. If there were two Chang Hsuns I should risk one of them, but as there is only one, we cannot afford the gamble."

During the latter years of the conspiracy the ardent monarchists, obsessed by a certainty of their eventual success, ignoring entirely the growing understanding among the Chinese people of the new democratic institutions, fairly wore a path between Hsuchowfu, Tsingtao, and Japan, making elaborate arrangements, appointing prospective officials, enlisting the services of the half-hearted conservatives who were weary of what was described as Kuomintang anarchy, and urging Chang Hsun on to leadership and action.

In January and February of this year it was decided in all circles that the hour of the homecoming of the royalists was imminent. The militarists were at sixes and sevens with all South China and their grumblings took a pro-Imperial turn. They were approached, their grumblings were taken as pledges, and their names were entered upon the monarchist books. Then when the dismissal of Tuan Chi-jui brought matters to a head, when the Tuchuns left the city of Peking in disgust and organized their revolt, the monarchists, still blind to the force of a growing public sentiment opposed to them and awake only to the disaffection among the military barons, prodded old Chang Hsun on, and had him accept President Li's invitation to come to Peking and act as "mediator" among the various warring elements.

The wiser among them even then had no thought of an immediate restoration; they counselled delay and a reconciliation between Chang Hsun and the militarists with whom he had differed in Tientsin, and they planned to execute their *coup*

Thousands of Chinese Fled from Peking during the Fortnight Preceding the Attack

when harmony had been reached at the season of the next presidential elections.

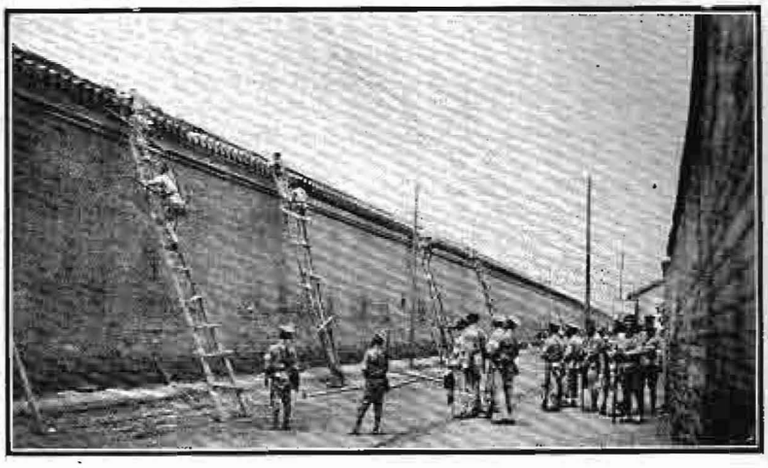
It is indeed very unlikely that Chang Hsun himself thought the season had arrived, although he undoubtedly believed like his colleagues that once his Emperor sat upon the Dragon Throne the leaders of the North would rise as a man and acclaim him, and that the nation, strife weary, would follow suit.

The arrival of Kang Yu-wei in Peking in the latter days of June aroused suspicions among the Republicans, but among the Monarchists, who believed their plans well laid and agreed upon, it did not presage an immediate restoration.

And then the *coup* came, a surprise to every one, a shock to Peking, a shock to the Manchu household, a pleasing and yet doubtful surprise for the Monarchists, and perhaps something of a surprise to Chang Hsun himself when he came to think seriously over the move which he very evidently made upon the impulse of the hour.

The old leader of the Tingwu army, who had come to Peking with a force of his half-drilled soldiers which certainly did not exceed 4,000, who had established in the premiership Li Ching-hsi and had then found that his candidate could win no support and establish no government, who found President Li Yuan-hung a swaying reed that bent before every puff of political wind, went out of the Chienmen (the Central Southern

CHANG HSUN'S SOLDIERS ON GUARD NEAR THE LEGATION QUARTER. THE OTHER MEN IN UNIFORM ARE MEMBERS OF THE PEKING GENDARMERIE



REPUBLICAN TROOPS SCALING THE IMPERIAL CITY WALL TO FIRE UPON CHANG HSUN'S HOUSE ABOUT 65 YARDS DISTANT ON THE OPPOSITE SIDE

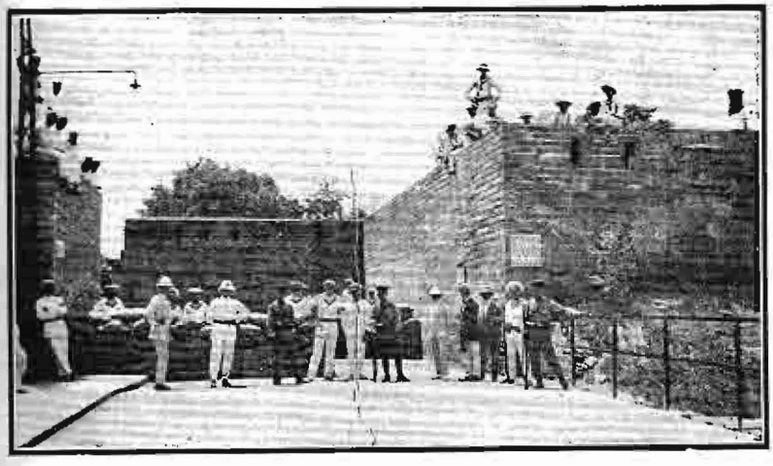
gate of the Tartar city) on the evening of June 30 to attend a dinner and a theatrical performance given in his honour at the Kiangsi Guild Hall.

According to all accounts, he returned in an expansive and self-confident frame of mind shortly after midnight, and being more or less inspired by good cheer and histrionic enthusiasm, he determined to put into actual effect his ambition of five years' accretion—to re-establish the Empire, then and there, to risk the one Chang Hsun, and to rely upon the pledges of his military colleagues, and the popular enthusiasm for ancient traditional institutions.

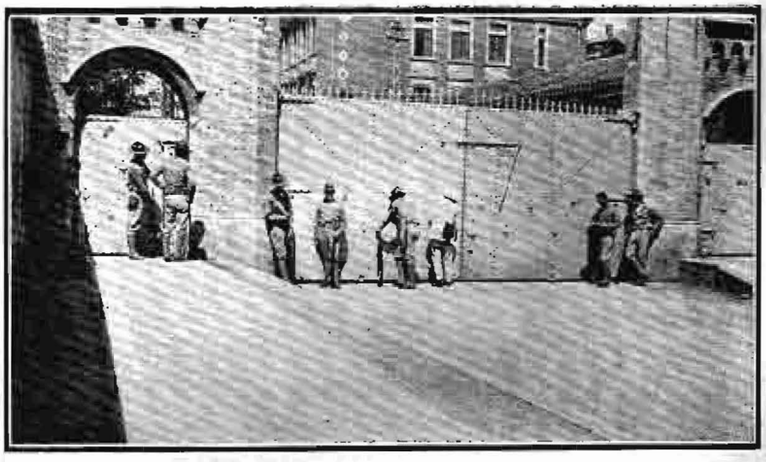
Wang Shih-chen, Chiang Chao-chung, and other military leaders in the Capital were summoned from their beds by telephone, and, when assembled in Chang Hsun's heavily guarded house in the south-east corner of the Imperial City, were told of the Tingwu leader's determination to recall Hsuan Tung to the throne, and were instructed to give their support.

Liang Ting-fan (Tutor to the Emperor), Wang Shih-chen (Chief of the General Staff), Chiang Chao-chun (Chief of the Peking Gendarmerie), Chen Kuang-yuan (Commander of the 12th Division), Wu Ping-hsiang (Chief of the Peking Police), and Tsai Cheng-hsun (Commander of the 1st Division of Manchu troops) were detailed to visit President Li Yuan-hung and persuade him gracefully to resign. Forthwith they visited the Presidential Palace, and at about 2 o'clock in the morning roused the President from sleep and put before him the startling proposal. The President was wide awake in a moment and firmly refused the request. Without ado and undismayed the delegation withdrew, reported the result of their mission, and in two hours' time returned to the President to announce the sensational fact that his retirement was a matter of indifference since subsequent to their first visit the Emperor had been restored.

DRAGON FLAGS IN PEKING HUTUNGS (NARROW STREETS)



NORTH-EASTERN ENTRANCE TO THE LEGATION QUARTER. ITALIAN LEGATION ON RIGHT; AUSTRIAN LEGATION ON LEFT. SAND BAG BARRICADE WAS ERECTED AND GUARDS POSTED IN CASE OF EMERGENCIES



THE ARMORED GATE AT THE WEST END OF THE LEGATION QUARTER GUARDED BY AMERICAN MARINES. THIS GATE WAS UNDER FIRE, IT BEING OPPOSITE CHANG HSUN'S LINE OF COMMUNICATION WITH CHIEN MEN

With amazing energy and swiftness the dramatic ceremonies of making an Emperor and unmaking a President were gone through before daylight, the Tingwu troops were stationed at the post-offices, railways, telegraph offices, yamens, and residences of prominent officials, the scribes were set to work on the Imperial Edicts, dragon flags were exhumed from the limbo, or from the lavender, and hoisted, and when Peking arose in the morning to go about its business it discovered, somewhat to its dismay, and not a little to its amusement, that it had reverted over night to mediaevalism, and that the ever-sensational Chang Hsun had played the conjurer with remarkable system and celerity.

It is impossible to describe even now the scenes at the re-establishment of Hsuan Tung upon the throne, which took place at 3 o'clock in the morning, for the accounts are still confused, and now that it is all over the actors are not available. It became known, however, before the evening of the first day that it had not been a scene of unmixed rejoicing.

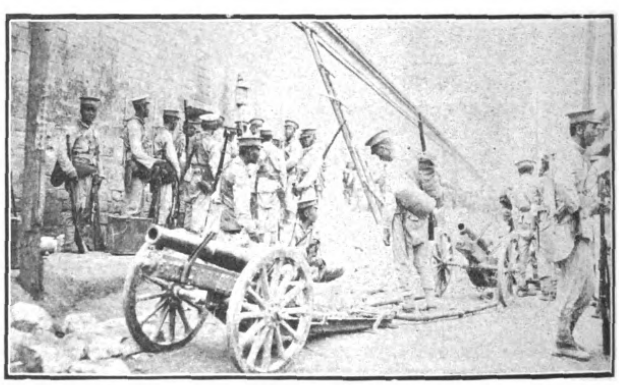
Of the Boy Emperor's three tutors, Liang Ting-fen alone was in favour of the immediate restoration. The Guardian, Shih Hsu, is said to have pounded his head upon the paving until his forehead was bloody, imploring all concerned to stop the farce, and the Dowager Chin is said to have wept bitterly and to have prophesied the immediate collapse of the tinsel glory which Chang Hsun insisted upon reinstating.

There was no suggestion of a compromise with democracy about the restoration which the Tingwu general had in mind and wanted one as a "souvenir," and tea houses outside the Chien-men resounded with the stilted phrases from these mediaeval documents, read aloud with due eclat by scholarly wags to highly appreciative audiences.

Nothing was clearer than that the whole *coup* was a joke, and yet no one could understand, least of all the resident foreigners, why it had been perpetrated and how men like Chiang Chao-chung, Wu Ping-hsiang, Chen Kuang-yuan, and other local commanders, whose forces outnumbered the little horde of strutting, tattered Tingwu ten to one, could permit themselves to play monarchy, to sing subsidiary parts in the foredoomed *opera bouffe*, and to make necessary the inevitable preparation of a punitive force and a punitive expedition. This is not yet explained, though at the time the theory was feebly put forward that out of consideration for foreign diplomats and residents, not to mention the Chinese merchant population, it was decided by these military chiefs to let the farce play itself out without introducing the melodramatic features of street fighting and looting.

The Imperialists on this first day either felt certain of their ground or were inclined to be conciliatory, for there was no attempt made to prevent the escape of well-known Republicans, nor to coerce unwilling appointees into accepting office. On the first train out of town Liang Chi-chao and Li Ching-hsi, the hopeless Premier, made their flight to Tientsin. They were followed by hordes of others; and democrats of all degrees, not trusting to Chang Hsun's mercy or indulgence, either went into hiding, fled the city, or found quarters in the Legation area.

IMPERIAL CITY WALL PUNCTURED OPPOSITE CHANG HSUN'S HOUSE BY THE REPUBLICAN TROOPS



REPUBLICAN SOLDIERS AT THE IMPERIAL CITY WALL WHENCE THEY WERE ATTACKING CHANG HSUN'S HOUSE

which he proceeded to effect with unsurpassed zeal. The constitutional monarchy, the *Hsu Ching Kung Ho* of the philosophical monarchists and of the disgruntled republican militarists and conservatives, was spurned.

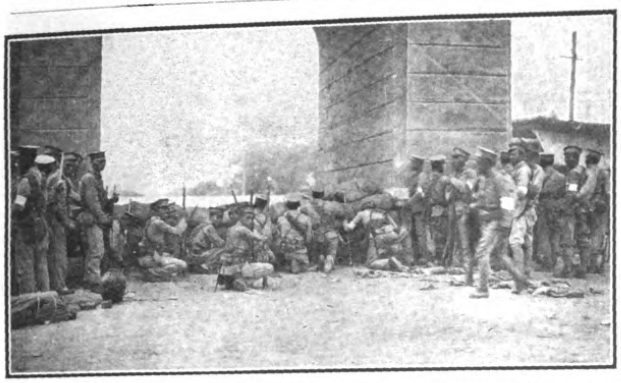
The old dragon robes, the peacock feathers, the buttons of rank, the titles of nobility, the strange privileges of favoured dignitaries, the pompous and bombastic diction of edicts, the veils of pearls and strings of beads, the *kowtow* and the special patois of court diction, all had to be dragged out of musty minds and flaunted before a public just getting used to badly designed silk hats, illfitting frock coats and handshakes with the mighty.

Immediately after the second visit to the Presidential Palace, the mission departed to draft and sign a mandate of resignation for President Li. The obstinacy of a President could not be permitted to dim the rising glory of an Emperor.

A similar effusion was drawn up for Feng Kuo-chang and others, and in the afternoon, when the populace, which crowded the streets in grinning anticipation of the next act in a splendid farce, had almost exhausted itself in a contemplation of dragon flags and pig-tailed Tingwu guards, the pompous Imperial edicts came out and enterprising pedlars, who bought them from the government press in bales, did a thriving business disposing of them to the giggling multitude at six coppers each. Every one

On the second day the flight of the populace began and every train leaving the capital was crowded to its utmost capacity with refugees, all carrying as much of their wordly goods as the baggage regulations would permit. This exodus continued until the suspension of the train service on the night of July 4 put an end to it, and then the hordes of timid folk sat upon their baggage in the stations night and day hoping that a train might, by some chance, venture down the line.

The President's position in his Palace was not an enviable one. He was a squatter on Imperial property after the establishment of the Empire, and he was given to understand that he would have to move back to his private house as soon as possible. The Japanese military adviser, General Aoki, visited him frequently to encourage him, the Diplomatic Corps notified Chang Hsun that they expected him to deal gently with the deposed chief executive, and many of his personal friends stayed with him night and day, but loss of sleep and loss of appetite wore upon him and on the night of the 2nd about 9:30 o'clock, he made his escape in a motor car in company with General Tang Chung-yin and his secretary Liu Chung-hsiu, into the Legation Quarter, and, after trying vainly to gain admittance into the French Hospital, and fearing pursuit, incontinently fled on up Legation street to the Japanese Legation and asked for protection at the military barracks.



REPUBLICAN TROOPS AFTER CAPTURING THE TUNGHUAMEN FROM CHANG HSUN'S TROOPS. IN THE BACKGROUND IS THE EASTERN GATE OF THE FORBIDDEN CITY

THE WATCH TOWER NEAR THE CHIENMEN, AROUND WHICH CHANG HSUN'S MEN SHELTERED AND FIRED UNTIL THEY SURRENDERED

President Li's flight and safe arrival upon neutral ground was the signal for the gathering of the punitive forces, and if Chang Hsun had taken China by surprise by his *coup d'etat*, his Republican opponents, under the leadership of General Tuan Chi-jui, certainly astonished the old Tingwu commander quite as much by the celerity and system with which they organized their punitive force, set them moving, and hemmed the king-maker within the four walls of the city of Peking.

General Tuan's reappointment as Premier and Commander in Chief of the Republican army, and the delegation of all Presidential powers to Vice-President Feng Kuo-chang, emanated from the Palace shortly before President Li's departure, and the following morning, the morning of the 3rd, Tuan Chi-jui and Liang Chi-chao went to Machang, the old training ground of the Model Army, and enlisted the nucleus of the punitive expedition from the 8th Division, which was then stationed there.

The Court at Peking nevertheless remained oblivious to this and continued to give audiences, to confer offices and titles, and in other ways to imitate the curriculum of other days. The public felt no particular change, except that there was annoying censorship of posts and telegraphs, and a falling off in the value of Bank of China and Bank of Communication notes.

The following day, however, Chang Hsun became aware that the opposition was active, that most of the Tuchuns, conservative politicians, and others upon whom he had counted for support, had gone over to his powerful adversary Tuan Chi-jui, and that they were uniting against him.

His information was scarcely more rapid than the approach of the punitive armies. With a remarkable showing of control and organization, General Tuan had twelve troop trains on the way to Peking on the night of the 4th, had Chang Tso-lin seizing cars at Fengtien to support him if necessary, had Tsao Kun advancing from Paotingfu upon Peking with the picked troops of two divisions, had Tien Chung-yu moving troops from the north, and in the Yangtze Valley and Shantung had Ni Shih-chung and Chang Huai-chih closing in upon Chang Hsun's forces at Hsuchowfu.

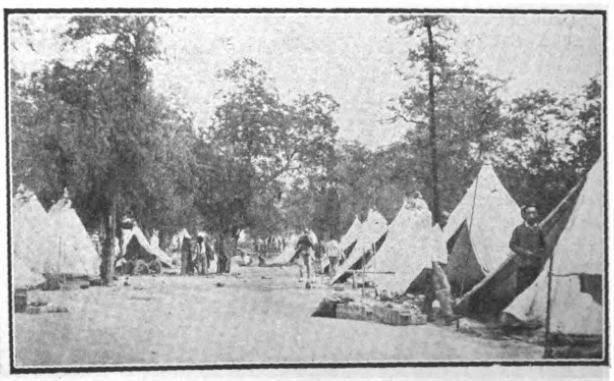
Preparations were made that same day to take over the government of Tientsin City at midnight, and it was carefully planned that two days later, on Friday, the punitive forces would meet in Fengtai, 12 miles from Peking, and close in upon the Tingwu chief and his little army.

Fifty thousand men were available at the first call for this trapping of the Empire and its handful of supporters, and from the moment of the organization of the punitive force, every one, including Chang Hsun himself, knew that the life of the Empire could be measured in days.

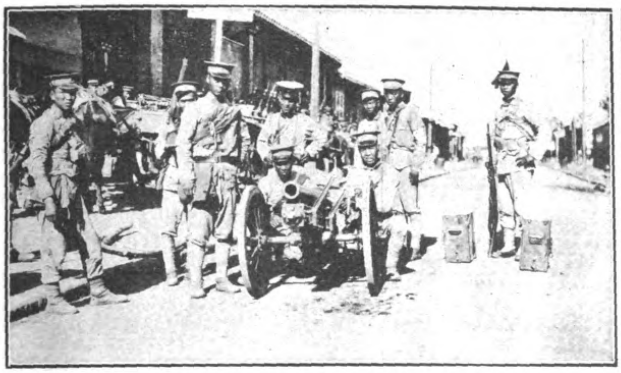
At this juncture the dragon flags began to disappear, the houses of monarchists were closed, the new officials failed to attend the offices which they had visited with much state and solemnity, and the Tingwu were looked upon by the populace, the police, and the gendarmerie, with hostility. A cooler and more self-assured lot of men, however, never paraded the streets of the Capital, and Chang Hsun himself was not one to abandon his Imperial project at the first approach of danger. The night train from Tientsin on the 4th of July brought him the news that his enemies were nearly 20 miles on their way from Tientsin to Peking, that the Langfang troops, half way up the line, who numbered 5,000, were ready to join the punitive force, and that Tsao Kun's men would be within field-gun range of the city by morning.

Instead of throwing up fortifications, however, or finding the quietest way into the nearest foreign community, Chang Hsun

THE CAMP OF CHANG HSUN'S BODYGUARD IN FRONT OF CHANG HSUN'S HOUSE



PORTION OF THE CAMP OF CHANG HSUN'S TROOPS AT THE TEMPLE OF HEAVEN



FIELD GUN IN A PEKING STREET FACING THE IMPERIAL CITY

A MACHINE GUN READY FOR ACTION

The attack commenced with a terrific uproar at 4:30 on the morning of Thursday, July 12. It is impossible to describe this "battle" which, with the exception of the shelling of Chang Hsun's house, was apparently nothing more than a face-saving incident on both sides. An enormous quantity of ammunition was fired into the air and over the roofs of all quarters of the city, a few soldiers—very few—were deliberately shot in the fray, a few were hit by chance, and a host of non-combatants, including at least five foreign spectators, were more or less seriously wounded; but there were no mass attacks, no bayonet charges and no point blank fusilades. In fact nothing much happened but noise.

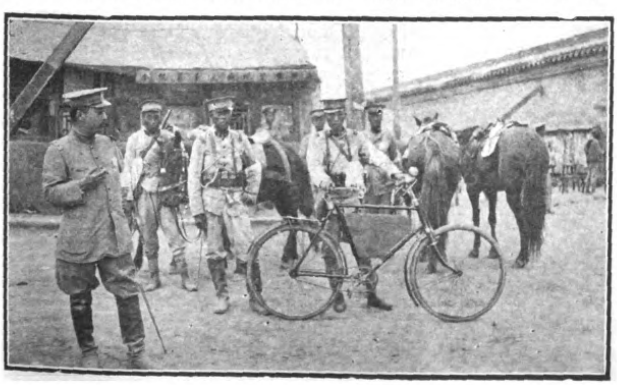
Between 9 and 10 in the morning after the Tsao Kun troops south of the Shunchiomen, and the Tuan Chi-kuei troops inside the Tsoanmen had made an enormous demonstration with the continual discharge of at least 10,000 rifles and quite a few field pieces in the neighborhood of the Temple of Heaven, where three were killed out of 1,600, there was a parley, and a surrender under arms was arranged with the promise of three months pay that same night. Matters were more businesslike about the Chienmen and the Tunghuamen, however, where 5,000 men besieged about 300 in the neighborhood of Chang Hsun's house and where the field pieces at the Shunchihmen, a little over a mile distant, did most effective shooting and reduced Chang Hsun's house and barracks to a mass of burning debris in a very few hours.

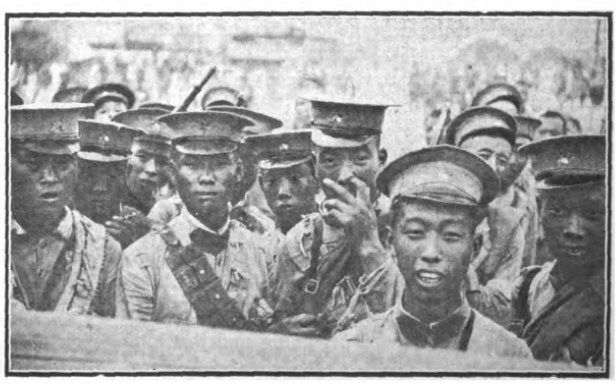
The most spectacular events of the day, however, were the flights of the inmates of the destroyed house and their reception in the Legation Quarter; and the ways and means of these flights are still subject to dispute and discussion. The stories told by Chang Husn's own men and by foreigners who were at the Dutch Legation when Chang Hsun arrived are, perhaps, the most credible.

Shortly after the surrender of the force at the Temple of Heaven Chang Hsun's big house in the Nanhoyen was subjected to such a violent bombardment that it was deemed necessary to take the women and children into the Legation Quarter. Early in the fighting, according to Chang Hsun's followers, a message had come from the Dutch Minister, offering sanctuary to the family at any time. The senior wife was, however, very unwilling to leave, and as Chang Hsun himself had made up his mind to perish with all his men rather than yield, the women, too. determined to stay.

The General's first secretary, Wan Sheng-shih, made up his mind, however, when the bombardment became severe, that the children should be taken out; so, shortly after 9 o'clock he went into the Legation Quarter and appealed at the Japanese Legation Quarter for a motor car and an escort. He waited for some time outside and then learned that the family, the two wives, six children, and nurses had already arrived. Sometime later he found that Chang Hsun himself had come to the Dutch Legation and he was asked to use his influence to stop the firing. Shortly after Wan's departure, Chang Hsun's adjutant, Liu Shih-ching, became aware of the danger to the women and children, and taking the elder wife in his arms he called upon the women and children to follow him and ran into the street where he put his burden in a ricksha, ordered the others to accompany him on foot, and went through the firing line with his charges as far as the Morrison street entrance to the Legation Quarter, where Chang Hsun's small car overtook him and relieved him of his care. In this same car he returned to the Nanhoyen where he found the house in flames and the General with a wounded officer named Chu.

Chang Hsun's officers crowded about him, knelt before him and begged him to leave, but he was obdurate, and it was not until two Germans, supposedly sent by the Dutch Minister, arrived in a motor car and fairly dragged him out of the house and into the motor car that he could be got away. It was then under the misapprehension that he was going to a discussion of terms of peace, and not as a refugee that he consented to go at all. Having arrived at the Dutch Legation he was told that he was an interned prisoner, much to his indig-





TYPES OF REPUBLICAN TROOPS

nation. He and his family were later removed to the German barracks under Dutch guard. Desultory firing continued for several hours, but the Tingwu in the Nanchihtze were finally persuaded to surrender, and steps were taken at once to have them disarmed and sent to Shantung by train.

A vast overflow of the city's population swept about the scenes of the fighting as soon as firing had ceased and the punitive troops were marched away, and the Chinese looked about in disappointed astonishment at the "battle-fields" which they expected to find heaped with corpses but which were marked by some slight damage to property only and by the bodies of the few unfortunates who had contrived to get in the way of low rifle shots. Chang Hsun's magnificent residence was gutted by fire and the neighboring building suffered somewhat from shell fire. A few dead horses marked the barracks, and an overturned motor car in a ditch, a litter of cartridge clips and shell fragments marked the district as a scene of violence, but the total number of casualties did not compare with the usual number of dead and wounded after a village clan fight, and the populace realized at once that it had been treated to a stupendous farce throughout.

The few dragon flags which were still flying on the afternoon of the battle came down that night and the following day the whole city was gay once more with the five-barred republican banners. The Tingwu were quietly disarmed and removed by train, after being liberally paid for their trouble, and the whole incident was considered closed. On the 15th Premier Tuan arrived with his suite, President Li emerged from the Legation Quarter, and China entered upon a new era of Republicanism with its accompaniment of soul trying politics.

The question of the responsibility of the Manchu Imperial Family, the matter of demanding an edict of abdication, the disposition of Chang Hsun's person and property, and the treatment due his colleagues, the possibility of an investigation into the Tingwu leader's charges of encouragement and desertion against Vice-President Feng Kuo-chang, Ex-Premier Hsu Shih-chang, and a host of military leaders, are all matters of discussion and much heart searching.

While foreign opinion was for the most part opposed to the restoration movement, Chang Hsun, by his very obstinacy and his courage in defying a large army with an ill-equipped force of 3,000 men, won not only some sympathy but credence for his assertion that he had been cheated and betrayed by his military colleagues. For this charge there must be more or less foundation, for Chang Hsun, with all his mediaevalism and his stubborn assurance, would scarcely have attempted to re-establish the monarchy with no more military backing than his own 3,000 braves, ill-supplied with ammunition, money, and food resources. It seems more than likely now that, in a season of wrath against the Li Yuan-hung regime, the Tuchuns promised Chang Hsun their support, and encouraged him to assume the initiative as he says they did. They would naturally assume, after Tuan Chi-jui's dismissal from office, that he would not take the field at Li Yuan-hung's call and reinstate the Republic as a matter of personal principle and good faith. But General Tuan responded with a celerity and vigour at the very inception of the Imperial government which left the disaffected Tuchuns little time to choose their course. They had either to follow and support Chang Hsun or to throw in their lot with Tuan Chi-jui. Both are strong, vigorous characters, but where the question of military influence and prestige enter in, there is no comparison between them. There was nothing to do but follow Tuan and help to push Chang Hsun to his fate, and this they seemingly did with a right good grace, probably with the knowledge that a less popular victim could scarcely have been chosen and one whose downfall would be likely to have fewer avengers.

Although many Imperial clansmen were certainly deeply involved in the plot to reinstate their Emperor, it is equally certain that the immediate advisers about the person of Hsuan Tung and the Dowager Chin were for the most part opposed to the restoration from the beginning and that in the latter days they used all their influence to get Chang Hsun out of Peking and to publish an edict of abdication.

On Friday, July 7, an edict was prepared ordering Chang Hsun to return to Hsuchowfu, but, as this was manifestly impossible at the time, a compromise was reached and the following day Chang Hsun's own resignation from his high posts—High Commissioner of the Council of Regency, Viceroy of Chihli, and Imperial Commissioner of Peiyang—was published and news of the drafting of an edict of abdication leaked out of the Palace. This never appeared, and it is not the policy of the Republicans now to demand such an edict. Since there is no reason to be particularly hard upon the Manchus it is considered better policy to ignore the existence of an Empire and to treat the whole series of incidents as a series of outrages perpetrated by Chang Hsun, as much upon the Imperial Family as upon the Republic. If the Emperor has authority, as Emperor, to abdicate, they argue, he confesses by the exercise of this authority his complicity in the Chang Hsun restoration.

The disposition that is to be made of Chang Hsun is a matter upon which no one has any definite thoughts or theories, for his situation is a peculiar one. It seems perfectly clear now that he came into the Legation Quarter by invitation, and that at the time of his arrival he was received and interned as a political refugee, which entitles him to continued protection from his enemies. The Republicans, however, have consistently advertised him as a traitor and a criminal, entitled to none of the privileges of a political refugee or a vanquished soldier, and there is much gossip about extradition and the possibility of his surrender to the legal or military authorities.

If the brief period of Empire has done nothing else it has surely brought forth a strong new crop of political problems and has materially changed the relative position of every political party in China. The commanding figure of the whole situation is Tuan Chi-jui, who left Peking, a very few weeks before the establishment of the Empire, discredited, almost in disgrace, a high and powerful official summarily dismissed from office. Now there is not a Chinese in China who knows anything of recent events, who is not aware that but for Tuan Chi-jui there would still be a monarchy, and very likely a monarchy backed by such powerful military support that it would have required the South months and even years to have shaken its foundations. Thanks to his prompt and unequivocal stand, the *opera bouffe* Empire was swept from the political stage in less than two weeks and a thoroughly organized government, republican in name and pledged to republican institutions, is once more established in Peking. It is gall and wormwood to his opponents no doubt, the last of all possible contingencies anticipated, yet in the face of the world's scrutiny Tuan's most violent enemies are restrained for the moment from attacking personally the man who has handed their Republic back to them.

Tuan Chi-jui is in a position to command unlimited respect and to wield great power, and if his political appointments and his movements in reshaping the government are controlled by a little tact and diplomacy, he may be given a fair chance by his political enemies to shape a strong and efficient government in Peking. He owes the southerners, the radicals, the Kuomintang folk, and the parliamentarians, no favours and no concessions as a private individual or as a politician; but as the governor of a huge chaotic state, which even a war lord of his capacity cannot hope to police adequately with his northern troops, he owes China a promise of peace and political harmony, and without some conciliation and a few favours bestowed upon his political opponents, he will fail in this duty and may even force the irreconcilable South to a division which would be fatal to China. The Imperial restoration has had this single portentous result; it has brought Tuan Chi-jui back as the strongest man in China, it has put the future of China and perhaps its ultimate fate in his hand; and it now remains to be seen whether this man of admitted honesty and determination has also the tact and the political finesse to deal competently with so responsible a charge.

WU PING-SHAN, HEAD OF THE PEKING POLICE, APPOINTED ACTING PRESIDENT OF THE MANCHU BOARD OF INTERIOR

of years, China has been a monarchy, and good and wise Emperors of all dynasties have left worthy footprints to us. Their system of administration has been far better than that of any other foreign nation. Therefore, in view of the circumstances, it is advisable for us to have a monarchy, and, in compliance with the teachings of the sages, it is better for us to restore our former Emperor.

The Great Tsing Family established its dynasty in a most just and fair way, and it saved the people from water and fire. It established its Throne in China by a fairer method than the dynasties of Han and Tang. It had nine Emperors. The first Emperor was a most accomplished scholar and military man, and when Kuang Hsu ascended the Throne, the situation of the nation was most critical, but he worked indefatigably to improve the condition of the nation. He compiled the records of past Emperors, and showed their good governments, such as to reduce the rate of taxes, and grant funds from the Palace treasury. Their love for the people surpassed any of the Emperors of the past dynasties.

In the year Hsin Hai (1911) the Empress Dowager was willing to sacrifice the glory of her family in order to save the people from misery. She won the admiration of the people, and indeed she did not lose her Empire. In ancient times Shao Kang with the assistance of a handful of followers restored the Hsia Dynasty, and Hsuang Wang with the assistance of Chaopo, restored the Chow Dynasty. They were admired by posterity.

During the time of abdication, it was ordered that a provisional Government be established to make a trial of the republican form of government. It was thought that the Republic would secure greater happiness for the people, but after a trial of six years we have now troubles in succession. Therefore an Imperial Edict has now been issued to receive back the administrative power.

Although we have less troubles than at the time of Hsia and Chow Dynasties, we have reaped better advantages. Recently our Emperor was applying himself to study during his minority, and although there were serious disturbances everywhere, there was perfect peace reigning in his palace. His education has been much improved, and his fame has spread far and wide. It is evident that Heaven has maintained the line of the Family and endowed His Majesty with special wisdom. There is no doubt that he will be able to save the situation, and to continue the works of his fathers.

We, Hsun and others, have been working hard for the past six years, awaiting the opportunity. We are afraid that the country might be in danger, and of late we have gathered ourselves together in Peking on account of the political trouble. We do not like to temporise: but we like to lay a foundation for thousands of years to come. We have shown the history of the past and the present circumstance: and are convinced that both Heaven and men have fixed their minds on you. We have consulted with the civil and military officials both in the Capital and the provinces and have found that they have unanimously agreed with us. Therefore to-day we memorialized the Emperor requesting his Majesty to ascend the Throne again. Thus the foundation of the nation is laid and the heart of the people is settled. The spirits of the dead sage Emperors in Heaven will be comforted and the heart of the people will be satisfied. We all are ex-officials of the Tsing Family, and received great favours from the Imperial House, and all the troops, people, etc,. are men who eat the grains grown upon His Majesty's earth and tread upon His Majesty's ground. Therefore on receipt of this telegram you should use the proper calendar, and hoist dragon flags. At this critical juncture it is imperative that we all should act with one accord to effect the salvation of the nation. We should respect the Emperor and love our country, and hope that under the rule of Tsing Dynasty the nation will flourish and the people will prosper.

LIANG TUN-YEN APPOINTED BY THE MANCHUS PRESIDENT BOARD FOREIGN AFFAIRS AND MEMBER OF PRIVY COUNCIL

(Signed) Chang Hsun, Wang Shih-chen, Chiang Chao-chung, Chen Kuang-yuan, Li Chen-chai, Tsai Cheng-hsun, etc., etc.

General Chiang Chao-tsung's Disclaimer

The following is the *Peking Gazette's* translation of a statement issued by General ChiangChao-tsung, Commander - in - Chief of the Metropolitan Gendarmerie, which gives an interesting ac-

JEME TIEN-YU APPOINTED BY THE MANCHUS PRESIDENT BOARD OF COMMUNICNTIONS

In this group the South is without representation, and it is stated that when General Tuan was asked to recast the Cabinet to include some Southerners he absolutely refused. With the exception of the military men included the remainder are members of the Chinputang party, and, as the correspondent of the *Peking and Tientsin Times* says, "this is far from being a wise move on the part of General Tuan Chi-jui, for by leaving out all the Southern leaders he is giving them a direct slap in the face and is throwing down the gauntlet to them."

The pity of it is that General Tuan has thus compelled the South to pick the gauntlet up, and even before he had left Tientsin for Peking after his victory against Chang Hsun strong opinions were being expressed against him. Instead of entering Peking to the unanimous acclamations of the country he returned on July 14 with the South against him, suspicious of his intentions, and believing that what otherwise would be regarded as extreme patriotism and loyalty was purely opportunism with the calculated motive of self-seeking. It is

YIK KONG-CHO APPOINTED VICE-MINISTER OF COMMUNICATIONS

greatly to be regretted that General Tuan should lay himself open to such allegations after his splendid exploit against the Hsuchowfu bandit and on behalf of the Republic. He deserves better things but the South cannot be blamed if they see in his actions an intention to ignore the constitutional principles for which they stand, especially when he disposes of Cabinet posts totally to exclude Southern representation.

By prompt avowal of a policy based upon constitutional procedure General Tuan could do much to stay any further widening of the breach, and one of the expectations the Southerners have, if General Tuan wishes to exemplify his broad-mindedness and his intention to unify the country, is that he will reinstate the Parliament which the Tuchuns caused to be dissolved. This is a demand the South made when Tuan had been but two days in Peking, and it is one to which all his supporters in the North will strive to prevent him acceding even if he personally is ready to do so, which we doubt.

The Militarists Gain Strength

The coup of Chang Hsun has been the means, as previously stated, of placing the Peiyang militarists in a position more powerful than they have hitherto occupied, for it has brought about the elimination of Chang Hsun, always an aggravating thorn in their side, and has consolidated them to such an extent that they will have an exceptional chance of vietory should the South take up arms against them in Constitutional interests.

An exceptional opportunity was presented General Tuan to heal the sore that has disturbed the body politic since the foundation of the Republic and his failure to seize it is to be condemned. Without exception foreign newspapers and foreign observers in China recognised the monarchy coup as a Heaven-sent opportunity to bring the North and South together, and unanimous hope was expressed that it would be taken advantage of to end an impossible set of conditions.

While on the one hand and South has some ground to blame Tuan Chi-jui for ignoring its existence, on the other the South cannot escape culpability for any difficulties that may arise. Unhappily there is a band of extremists in the foreign settlements which can see no good in anything with which is associated the Northern military leaders, and though General Tuan Chi-jui deserves the unequivocal thanks of the southern leaders for his promptitude in rescuing the Republic he not only is not accorded one word of appreciation but is passionately attacked on the flimsiest of pretexts. Prejudice and suspicion are permitted totally to submerge the finer qualities which should be possessed by even the meanest intellects, and when so-called leaders exhibit themselves in roles which can not be estimated by observers other than as unpatriotic it is difficult to see how their more moderate, broad-minded, and intellectual associates can continue to adhere to them. Ex-President Li Yuan-hung makes a specific appeal to such men in the telegram which he despatched after leaving the Japanese Legation on July 14 and which is given in full below. He urges all parties to sink their prejudices and unite lest the country be lost, or, as he picturesquely puts it, "Every fight within the house among our brethren can be utilised as material for unscrupulous people to steal the domain." The time has come when wisdom must be exhibited on all sides if China is to retain her national entity, and the sooner both sides recognize that all views most be moderated the sooner will the country have some chance of recovering from the trials and tribulations which have beset it during the past six years.

Seeing the storm clouds again rising the members of the Chinputing party selected by General Tuan for his Cabinet declined to accept the positions, obviously with the intention of demonstrating that they are not seeking power. General Wang Shih-chen also refused the war portfolio and when the Premier took up his duties at the Cabinet offices on July 15 he found himself confronted with the necessity of making other arrangements. Efforts were made to persuade Liang-Chi-chiao, Tung Hua-lung and Lin Chang-min to reconsider their decision, and these were ultimately successful.

Li Yuan-hung's Pathetic Valediction

On the afternoon of his arrival in Peking General Tuan Chi-jui called at the Japanese Legation to see General Li Yuan-hung, and shortly afterwards the ex-President left the shelter of the Legation Quarter for his home, where his family also later arrived. Already he had made up his mind no longer to remain as President and in the course of the evening despatched two telegrams to notify the country of this fact and the reasons for his decision. The telegram explaining his position is pathetic, but it makes an appeal to all parties which should be listened to if the desire of the politicians really is to serve the country. Li Yuan-hung lost great prestige when he submitted to the dictates of the Tuchuns to dissolve Parliament and for that reason his words are not likely to have anything near the weight they otherwise would have had. The telegrams were as follows:

To President Feng at Nanking, Inspector General Lu at Wu-min..... (the addresses include Hsu Shih-chang, Liang Chi-chao, Tang Shao-yi,

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Petrograd to New York by Railway.—According to Canadian press dispatches through railway route from the United States to Petrograd by way of Canada has been outlined in a lengthy report to the Winnepeg Grain Exchange. The scheme has been considered for some time and negotiations with the railways and governments which will be involved in the project will be opened in the near future. Increased transportation to the westward without running the risk of submarines sinking ships, and assistance in the war for Russia with munitions and food will result if the proposed connection is established.

The plan provides for a standard railway line, connecting United States roads through British Columbia and Alaska with Behring Strait and a line from the Siberian coast to the Trans-Siberian railway. Large ferries would carry freight and passenger cars across the 65-mile wide strait. Negotiations have been opened with the Russian Government to improve the Trans-Siberian railway into a modern road instead of a primitive stretch of track overburdened by war transportations.

The United States commission to Russia it was expected, would take up various phases of the proposed line with the new Russian Government. Men back of the undertaking believe that within a few years an international railway will connect New York with Petrograd. They are taking into consideration the possibility of the war lasting several years. The promoters of the project are satisfied that future benefits would justify the vast financial outlay that will be necessary. They declare that a few years of world's peace would make the most important railway route on earth.

S. M. R. Traffic Returns.—The South Manchuria Railways traffic returns for the month of June yielded a daily average of Y89,090,00 being an increase by Y39,732,20 over the corresponding month of last year, the particulars being as under:—

Passenger Receipts	Y 509,149.48
Goods ,, ...	1,990,738.32
Warehouse ,, ...	43,784.73
Miscellaneous ,, ...	121,047.07
Total	2,672,719.60
Increase on the corresponding month of last year...	Y1,191,965.94

The total increase since the beginning of the present fiscal year (April 1st) up to June 30th reached Y4,072,001,01, which means a monthly average increment of Y1.357,333.

Baron Nakamura's report for the last fiscal year was recently set forth as follows: In respect to railways, the company not only doubled sections on the main line but reconstructed stations, bridges, locomotive sheds, etc. Locomotives and cars were also either built or repaired and at the close of the term the company owned 270 locomotives, 219 passenger cars and 3,194 freight cars of the newest types. On all lines 4,410,816 passengers were carried and the company earned 6,040,453 yen. The amount of freight handled was 6,229,757 tons which brought 19,882,475 yen.

The company's shipping business underwent no tangible change except the sale of the six steamers to the Dairen Steamship Company, established for the purpose of undertaking a regular service between Dairen and Shanghai via Tsingtao under a special arrangement with the company. At Dairen harbor accommodations were improved by dredging or reclaiming shallow parts on the port, at the same time pushing on the construction of wharves. At Newchwang also the dredging of the river Liang and the improvement of warehouses were continued. The quays at Antung were reconstructed to facilitate loading. At Dairen the trade with the outside amounted to 2,733,896 tons, the leading articles exported being soya beans and coal. The total receipts come up to 2.522,120 yen.

The company's mining business prospered and in spite of the decrease of 109,048 tons in the yield of coal the sale was 293,215 tons greater. The decrease in production was due to the explosion at Fushun. The company's coal was in good demand not only in Japan and Manchuria but in some South Pacific countries. A noted departure in this line was the inauguration of preparations for the erection of a big iron smelting works at Anshanchien. The new works is planned to have a producing capacity of 1,000,000 tons a year. It will be completed in four years. In the first year the mill will yield 156,000 tons of pig iron.

A statement of account was submitted, showing the year's net profit amounted to 10,107,607 yen, exclusive of the balance brought over of 2,857,473 yen. Of this amount 505,380 yen is set aside for legal reserve, 2,000,000 yen as government dividends, 2,500,000 yen as special reserve, 300,000 yen as bonuses for officers and 2,400,000 yen dividends for private shareholdenrs at the rate of 8 per cent per annum, the rest 4,759,700 yen being reserved as balance carried forward. The report and the account were approved by the meeting along with the plan of increasing the company's capital by 20,000.000 yen, divided into 200,000 shares.

Wuchang-Yochow Section Open.—As the construction of the large iron railway bridge over the Lu kiang at Puchi has been completed passenger traffic with Yochow on the Wuchang-Changsha section of the Hankow-Canton Line was commenced on the 6th July. Because of the present political crisis, and in order to avoid possible trouble, the Managing Director of the Railway has given orders to the railway guards to be very careful all along the line and more particularly when the train runs through the borders between the Hupeh and Hunan provinces.

Shihpingkai-Chengchiatun Railway.—The trial runs conducted over the 5 mile section of the Shihpingkai-Chengchiatun Railway between the Railway and Chinese Towns of Shihpingkai, having given satisfactory results the operation of construction trains was begun on July 25th. The S.M.R. Co. has loaned the Shihpingkai-Chengchiatun Railway one locomotive, ten gondola cars, and five flat cars, with a gang of about ten drivers, attached to the Shihpingkai Station staff.

More Cars for Manchurian Line.—The present rolling stock of the South Manchuria Railway Co. consists of 3682 cars, including 3,100 odd goods cars. As South Manchuria and the adjacent country is opened up, a natural increase in the goods for conveyance has followed and at the height of the produce season, the traffic is far heavier than the Company can cope with. Hitherto the Company's Management has had other more urgent claims to satisfy, and has had little to spare for rolling stock.

Now that the construction of the Anshan Steel Works has been taken up in good earnest, the burden on the carrying capacity of the Line has increased in the matter of stone, cement, and the building material for the Works, the railway sidings, the Works Colony, etc. All the same time there are talc and pig iron put out in a increasing quantity by the Penchihu Colliery & Mining Co., and the other mineral products to reckon with. The South Manchuria Sugar Refining Co. has entered into a contract with the Railway Company for the transportation of beets. As the work on the Shihpingkai-Chengchiatun Railway progresses, the Railway Company is bound to supply it with rolling stock to enable it to keep construction trains in operation.

There is still another contingency to be faced. When the proposed amalgamation of the Chosen Railway with the S.M.R. Lines takes a concrete shape, more goods cars may have to be sent to Chosen as the volume of traffic increases. Even now as many as over 300 cars are set aside for carrying Fushun Coal to Chosen. Under all these pressing circumstances, the Management has drafted a plan to construct about 1000 new goods cars and to include the necessary amount in the next year's estimates. The manufacturing capacity of the Railway Workshops must be considerably increased.

Japanese Road to be Railway Feeder.—To improve the means of travel between Yokohama and Tokyo, which district is fast gaining in importance as a manufacturing centre, Governor Ariyoshi proposes making a wide road between Kanagawa and Shinagawa connecting there two important railway shipping powers. Whether the present road is to be widened or a new road cut is not yet decided an the need of the midway towns and villages must be consulted. The cost is definitely fixed as Y3,000,000. A seeding of Y800,000 over the first estimates. Half of the sum is to be defrayed by the Government and the remainder by Kanagawa-ken and Tokyo-fu. It is reported that the Home Minister has unofficially sanctioned the proposals. Similar improvements are badly needed between Kobe and Osaka.

Shanghai Tramways.—The following is the Traffic Return of the Shanghai Tramways (Foreign Settlement) for June, 1917, and for 6 months ended June 30th, 1917, with figures for the corresponding periods last year:—

	June, 1917	June, 1916
Gross Receipts	$129,668.58	$125,156.12
Loss by currency depreciation	28,846.86	33,287.14
Effective Receipts ...	$100.821.72	$ 91.868.98
Percentage of loss by currency depreciation	23.70	28.30
Car Miles Run... ...	342.784	305.375
Passengers carried ...	5,937,399	5,593.447
	6 Months ended 30th June, 1917	6 Months ended 30th June, 1916
Gross Receipts	$784.518.29	$725,824.17
Loss by currency depreciation	174.225 04	191,019.29
Effective Receipts ...	$610,293.16	$534,804.88

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THE FAR EASTERN REVIEW

遠東時報

Engineering
Finance ❋ Commerce

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Mr. CHU KIN HOW
DIRECTOR OF THE PEKING-MUKDEN RAILWAY

CHINA'S RAW SILK INDUSTRY

NEW BUILDINGS OF MANILA

CHINA ENTERS THE WAR

WHERE JAPAN STANDS NOW

WHAT CHINA CAN DO IN THE WAR

MORRISON'S LIBRARY LOST TO CHINA

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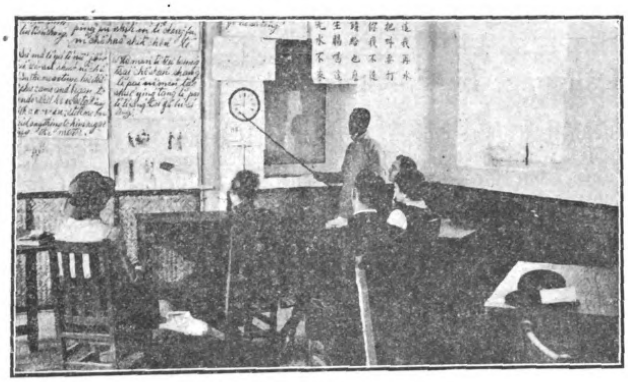
achieved here have been startling. As the *Peking Daily News* pointed out in a leading article on "Language Study in China," "Its students go from it at the end of a comparatively short time with a working basis of Chinese thoroughly well grasped." The manner in which this is accomplished is perhaps worth explaining.

In the first place the language is taught by teachers who have been trained to teach. It is the teacher, and not the student, who takes charge of the work. The methods or lack of methods of the old *hsien seng* give place in this school to scientific teaching. These trained Chinese teachers—and there are half as many teachers as there are students—are under the supervision of the Director, who sees that the whole work is co-ordinated and well ordered. The tuition is divided into three portions, namely, general class work, group work, and personal teaching. These alternate, with the result that the students can have several hours personal training and several hours as members of a group of half a dozen or less meeting in one of the many rooms set apart for this work. All are encouraged to speak and to express themselves. (Note the illustration of the Chinese teacher with his group). Learning in this way is much more agreeable than in the old way in which the personality of the teacher was subordinate to that of the student. He realises that he is actually speaking Chinese and Chinese which can be understood.



GROUP INSTRUCTION

After six months of this training specialisation begins. That period has been found to be necessary for foundation work. Missionaries, doctors, school teachers, Y. M. C. A. workers, housekeepers and nurses then branch off into their respective phraseological departments.

So far the School has been availed of by the men and women of the callings mentioned, but there is no discrimination on the part of the authorities of the School in favour of missionary workers. All who desire to learn the language are welcome. Students from any walk in life are invited. Already the Legations of the United States and of the Netherlands, recognising the value of this institution, have decided to send their language students to its courses and so have their language studies directed. Other Legations may do likewise.

The work of the School does not end here. Institutions and men in the interior send their language teachers to be trained in this School. The wisdom of such a course is obvious. If the teacher is taught the most up to date methods in the profession the benefits derived thereby will be passed on to many others who are struggling in interior stations to master the speech of the people around them.

As a matter of fact, the North China Language School, astonishingly successful as it has been, is only in the embryo stage. It is bound to advance to a greater usefulness and greater scope, reaching to proportions of which perhaps its founders did not dream. Not merely will it include students of the missionary type, for whom it was originally devised. In its class rooms will doubtless be found students from the Legations, from Chambers of Commerce, and from commercial

TEACHER'S INSTRUCTIONAL CHART

and professional offices. Men and women who never before thought of learning the language will feel constrained to take advantage of the facilities within their reach and acquire some knowledge of the Mandarin tongue, especially when evening classes are commenced, as is planned.

No other school or college for the study of Oriental Languages can hope to equal the instruction given here. What school, for example, has forty or more Chinese teachers simply to teach Chinese to foreigners? Certainly none in Europe or America, or for that matter outside Peking. Where better can the language be studied than in the capital itself? Where also can a more comprehensive knowledge of the nation and its institutions be obtained than in Peking? The North China Language School is fortunate in being able to offer all the advantages cited. Nine-tenths of the time of the students is spent with Chinese teachers. The remaining small proportion is with foreigners. A feature of the work is the lecture course. Men who are engaged in the subjects they deal with are invited to lecture to the students. Thus Dr. C. C. Wang, of the Ministry of Communications, discourses on railway enterprise in China, Dr. D. W. Lyon on the Fundamental Social Philosophy of China, Dr. A. H. Smith on Village Life in China Prof. L. R. O. Bevan on Constitutional Development of China etc.

The School, located in a series of semi-foreign buildings on the Teng Shih K'ou, is admirably arranged for its varied work. It has a general class room and smaller rooms in which groups are accommodated, while it has also an innumerable number of little apartments in which the personal tuition can be given during the winter months. In summer the verandahs are more suited for this purpose.

YELLOW RIVER BRIDGE TO BE REBUILT

The authorities of the Peking-Hankow Railway are now considering the question of rebuilding the bridge which carries the railway from Peking to Hankow over the Yellow River. The bridge was originally built as a temporary structure, and the time has come when serious attention must be given to it. Extensive repair work will have to be undertaken immediately, and it is stated that a sum of $11,000,000 will be required for this purpose. The erection of a permanent structure will be a large undertaking, and if it is decided to replace the present bridge it is possible that a site will be selected some distance up stream, which will mean a deviation of the track from the existing route. It is felt that at the present site the river might at any time change its course, and to avoid loss and possible disaster a locality will be selected where the river shows less chance of breaking away.

in the Cabinet, and the President, instead of showing an inclination to remove the Cabinet seemed to favour a dissolution of the House of Representatives, the House could forestall such a move readily enough by impeaching the whole executive force of the nation if necessary, and the Senate, before which they would be tried, could pass judgment upon them, thus supporting the Representatives. Further room for quibbling is provided by the clause which provides that one house cannot sit without the other. Although the President cannot dissolve the Senate, he cannot dissolve the House of Representatives without involving the Senate in the dissolution Here there is room for "interpretation" of the Constitution and as the two deliberative bodies have the exclusive right to expound this sacrosanct document, they would doubtless interpret it to their own convenience, but whatever government were in power would certainly insist that since neither House can sit without the other and since no act can become law by its passage through one House alone, the President's right to dismiss the representatives would imply a right to get rid of the Senators at the same time.

Policy of Expediency

With an eye upon the career of Premier Tuan Chi-jui the framers of the constitution inserted a clause governing the dismissal of the Premier dictated by the political exigencies of the moment and thereby gave no little offense to the conservative friends of the Premier. It is provided in Article 81 that all Presidential mandates must have the countersignature of the Cabinet ministers to whose departments of government the business of the mandates pertain, but—and the exception is more marked because the rest of the clause has nothing to do with appointments or dismissals—no countersignature is required for the dismissal of the Premier. Having at hand a harmless and friendly President and a Premier whom they feared, the Parliamentarians made this hard and fast rule, without ever dreaming, it seems, that there might come a time when their strong opponent might be the President, as in the days of Yuan Shih-kai, and their champion the Premier. Such a reversal of conditions would doubtless cause them to regret profoundly the clause which permits a President to shake off a Premier on his own unchecked responsibility; but the Parliamentarians have not looked far ahead in any of their provisions. As a product of political expediency the document on the whole is short-sighted. It gives enormous power to an irresponsible group of men who are representative of nothing but the small group of provincial chiefs who control their elections. For the time being the concentration of such power in the two houses in which the radical and progressive elements have a majority is certainly to their immediate political advantage, but should these parties ever have a President and a Cabinet of their own choice placed face to face with a Parliament of their opponents fortified by the latest constitution they would have still more occasion to regret the policy of centralizing all power in a body which is so easily shaped by the provincial chiefs and so difficult to dissolve when once formed. The very fact that the political dictators of most of the provinces have been for some time opponents of the factions which are in the majority in Parliament would have made them thoughtful and cautious one would think, but the policy of immediate expediency and nothing beyond it seems to have controlled their councils.

The definite form which the government of China will take when the general mass of the people, the electorate, is sufficiently interested in constitutional government and sufficiently well educated in its duties to the government and to itself to make its influence felt, cannot even be surmised now. Those who do not know the utter indifference and the dense ignorance of the Chinese people in all matters of government, except the old Imperial system which relieved them of responsibility and left them nothing to worry about but the conduct of their own lives, cannot know how far China still is from anything approximating effective democracy, nor how little there is in Chinese "Republicanism" apart from its present force as a political slogan. Constitutionalism in China can for many years to come be little more than an ideal towards which the official classes must lead the people. The insight of the official classes into political science is not great, and for the most part they are either extremely partial to wholesale adoption of foreign institutions without any attempt at adaptation, or blindly devoted to the preservation of ancient and decrepit institutions which have no place in a modern world. The struggle between these two forces is a fierce one in China and the political pendulum swings from one extreme to the other, from make-believe Republicanism, set upon very feeble props, to decadent imperialism with all its tinsel and spangles, and then back again, creating much panic, chaos, and anxiety as it swings, and clearing a broad field for the operations of the selfish and unscrupulous. Out of all this turmoil the Chinese people are getting nothing but very valuable wisdom and experience upon which a very few permanent institutions and a very few permanent principles are being erected, slowly but surely. When much more experience has accumulated out of a great deal of chaos there will be much wisdom and many permanent principles, and these principles will crystallize into the Chinese Constitution. The Constitution will naturally grow out of the struggle between the various forces in China and will not be either complete or permanent until this struggle has been fought out, and either a permanent victory or a permanent compromise effected such as the whole world will recognize.

In the meanwhile we shall probably have more constitutions and still more, each professing to be the eternal law of the sons of Han for all time, and each giving way as its short-sighted provisions are outlived, to still other documents to be handed down to remote posterity. The only doctrine which any Chinese legislative body can now hope to promulgate and embody in the permanent code of the Chinese people, is the very ancient Chinese law of the supreme authority of common sense. For many years to come expediency must be put above pompous documents in the regulation of Chinese politics, and common sense a higher authority than imported theory.

RAILWAY APPOINTMENTS

Immediately following the assumption of office of Mr. Tsao Ju-lin as Minister of Communications several changes in the railway service were made in order to secure efficiency in the department.

Mr. Yih Kung-cho was appointed Vice-Minister, and his knowledge of railway affairs, gained previously as Vice-Minister and Director-General of Railways, should be of great value.

Dr. C. C. Wang vacates his post as Councillor to the Ministry and permanently takes up the Directorship of the Peking-Hankow Railway. Just prior to the restoration of the monarchy he was appointed as Acting-Director of the Peking-Mukden Railway, and just began to initiate some necessary reforms with regard to the native staff when he was sent to the other line.

Mr. Chu Kin-how, who has had considerable experience on the Peking-Mukden line has been appointed Director, and that appointment is a popular one.

Mr. Ho Jui-chang has been appointed Vice-Director of the Chuchow-Chinchow (new American) Railway.

Mr. Chuan Liang, who vacated his post as Councillor to the Ministry, has been appointed to the Directorship of the Kirin Railway, but we understand that he has declined the post. Mr. Chuan Liang was acting-Minister of Communications when the monarchy restoration was effected.

Mr. Ting Shih-yuan has been made Director of the Peking-Kalgan-Suiyuan Railway.

Chiang Tsun-wei and Yao Kuo-chen have been made Councillors to the Ministry, while Kwan Ken-lin, Liu Fu-cheng and Hu Shih-tai have been made Departmental Chiefs.

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Canton-Hankow Railway Progress.—The following account of the past year's work on the Canton-Hankow Railway is abstracted from Customs reports:

Considering the many adverse conditions under which work on the Hupeh-Hankow section of the Canton-Hankow Railway continued to be carried on, the Administration are to be congratulated upon having accomplished as much as they did, although that amount was not so great as it certainly would have been had material from abroad been procurable and had funds been adequately provided. The war so seriously hampered the supply of indispensable articles of European and American manufacture that special measures had to be adopted to keep the work going at all. Fortunately, the Administration were able to draw upon some of the stocks of the I-K'uei section of the Hankow-Szechwan Railway, and so by resorting to many devices it was made possible to continue operations. During the early part of the year there were some political troubles in Hunan, and heavy rains were followed later by low water in the creeks, making transport difficult, all of which contributed to the retarding of progress.

Coming to particulars 1,686,000 cubic fong of earthwork were completed; and although here and there accidental subsidences had to be made good, the earthwork of this section of the line is practically finished. The bridgework went forward satisfactorily, notwithstanding that it is exceptionally heavy and in places difficult. Two piers in the Milo River and Liuyang River had to be founded with pneumatic sinking plant. Some girders and steelwork have yet to be received and placed. Of the bridges finished, 49 have spans of over 60 feet, while one is more than a quarter of a mile long. About 15 miles of track have been laid southwards of Yochow and 45 miles northwards from Changsha. The erection of the steelwork of the large span bridges is in full swing, the Hsinch'iang River bridge is almost completed, the Milo River bridge (eight spans of 150 feet each) is expected to be finished in about four months' time, while the two large bridges at Laotao and Liuyang, near Changsha, will be completed in about two months' time. The low level of the Siang River during the last four months of the year retarded progress, the transport of materials being almost impossible. At the end of 1916, with the help of a stock of rails originally destined for the Szechwan line, 109 miles of track, excluding sidings, were laid, thus completing 140 miles of the main line out of the 226 miles of railway that separate Wuchang from Changsha; but owing to the uncertainty of the future provision of money and materials, the date of their connexion cannot be predicted at the present time. Already the populace hear the whistle of trains. In a few years Wuchang will extend beyond the city walls towards the railway station, and there will be a development and a concentration of trade in that neighbourhood which bids fair to rival the position of Hankow. The line is laid at such a distance from the port of Yochow—the station being 2½ miles distant, and no road to it beyond country paths,—the operation of the line will be only a modified convenience to Chengling.

Nan-Hsun Railway Progress.—According to a Kiukiang Customs Report the Nan-Hsun Railway bridges had been so far completed in 1916 as to allow of the passage on the 6th June of the first through train to Nanchang. The through trip takes four and a half hours, as opposed to 24 hours under favourable conditions by launch. The construction of the railway has taken 10 years and cost close on $12,000,000. Receipts during the low-water season have doubled in amount, from $500 to $1,200 daily, and in addition the company receives $10,000 monthly from the Hukow likin station, being the proceeds of special taxes collected on behalf of the railway on paper, timber, grasscloth, rice, and indigo. The rolling-stock at present consists of 10 locomotives, 25 passenger-cars, and 75 goods wagons. The passenger fare for the through journey ranges from $3.25 for first class to $0.50 for fourth class, and freight charges vary from $4.96 to $1.60 per ton according to the nature of the cargo.

Ning-Hsiang Railway Survey.—In railway construction, says a Nanking Customs report, very little has been accomplished during the past year. The Lung-Hai line has been completed as far as Suchowfu, and is now adding largely to the volume of trade that reaches Pukow by the Tientsin-Pukow Railway. An excellent survey of the route proposed for the Ning-Hsiang Railway has been carried out, but all work has been suspended since August. It is to be hoped that construction will be resumed at an early date, as the country to be traversed is rich in agricultural products and mineral resources, and the line when completed should prove a very remunerative enterprise.

America to Buy Mansuri and Changchun Line.—According to the Changchun correspondent of the Tokio *Nichi Nichi*, a section of the Chinese Eastern Railway line will be transferred from Russia to the United States.

This rumor, said to be based on information emanating from a reliable Russian source, says the section of the railway line between Mansuri and Changchun will be sold to the United States. One American resident who seemed to be proud of the American success in securing this concession, is reported to have said that the negotiations on this bargain have already been finished between the two governments.

Commenting on the above, the *Japan Advertiser* says:

At the time the Russo-Japanese Convention was being negotiated early last year, a proposition was made that Russia cede a section of the Chinese Eastern Railway between Changchun, where the Japanese South Manchuria Railway terminates, and the Sungari River, as a collateral of the convention. Viscount Motono was then in Petrograd as Japanese Ambassador and was quietly negotiating for the transfer of the railway. It was understood then that the negotiations were being carried on smoothly with much success, and everything was apparently fixed by the two governments so that railway companies could sign the contract of transfer, when the news was prematurely published broadcast. Russians took notice and objected to the proposition.

It was charged in Japan then that Marquis Okuma, former premier, was responsible for giving out the news. Whoever was responsible, Viscount Motono, when he returned to Japan, complained that his diplomatic service had often been put to nought because of premature publication of facts or fictions. He was then speaking in a general way without blaming any one except the press, which he thought was indiscreet.

However, the completion of the negotiations for the transfer of the Chinese Eastern Railway between Changchun and the Sungari River was one of the things which Viscount Motono failed to bring about. The proposition is even now at a standstill, although at that time that proposition and the right of navigation on the Sungari River were considered to be two collateral conditions for concluding the convention, that is, as far as Japanese people were concerned, no matter what the position of the Russians may have been. The Japanese had thought because of the good feeling existing between the two nations, Russia should be willing to part with her possession, of which Japan could make a better use than the Russians themselves.

New Kwangtung Railway Plan.—A company is being formed to build a railroad from Weichow in Kwangtung province to Cheung Muk Tau where it will connect with the Kowloon-Canton Railway, says a Hongkong press report. This will give Weichow direct connection with Hongkong and Canton. It is being suggested that a motor service be put in operation immediately to meet the needs of rapid transit until the railway is completed. Weichow is also on the railway planned from Canton to Fukien province.

Shihpingkai-Chengchiatun Railway.—The damage done to the Shihpingkai-Chengchiatun Railway and the bridge at Sankiangkou by the recent flood has been found not so serious as at first feared. Unless something unforeseen takes place, the construction work of the whole line is expected to be finished by the end of October. As the conclusion of the construction work is now within sight, the railway management is preparing to open a traffic department whose staff will be composed of about 150 Japanese and Chinese. The Japanese staff will comprise seven officials, all of the South Manchuria Railway Co.

Mr. Wu-wu (Director of the Railway), accompanied by seven of its chief officials, including engineers, eecently visited the Railway Workshops, Shahokou, at Dairen, and conferred about the rolling stock to be borrowed from the S. M. R. Co. It consists of 4 locomotives, 10 passenger cars, and some 60 goods cars. It is expected to operate experimentally on the new line by the end of November.

S. M. R. and Chosen Lines Linked.—The agreement for entrusting the management of the Chosen Railways to the South Manchuria Railway Co., has been signed and is in substance as follows:—

1. The profit and loss of the Chosen Railways shall be kept as a separate account. Until the profit reaches 6% of the invested capital amounting to Y50,091,116 the whole sum shall be paid to the Government-General of Chosen. In the case of the profit exceeding 6%, half the excess amount shall be paid to the Government-General. Any loss shall be made good from the profit in the succeeding years.

2. The construction costs of new lines shall be borne by the Government-General of Chosen.

3. The period of entrusting shall run for full 20 years from the date of signing the agreement which may be cancelled at any time if deemed necessary. The taking of extraordinary steps shall be ordered in war time.

4. The S. M. R. Co. shall be placed under the direction and supervision of the Government-General of Chosen as regards the management of the Chosen Railways.

Yokohama Railway Sold.—The Yokohama railway which is now leased to the Imperial Japanese Railway Bureau has been sold for 3,500,000 yen to the latter. The amount will be paid in government bonds. The balance of the bonds and the actual price of the railway will be paid by cash. The company will hold a meeting of the shareholders and decide whether they will accept the bonds. If the shareholders desire the money in cash, the bonds will be sold and the amount paid to the shareholders.

Japan to End Car Shortage.—A plan is said to have been devised by the Imperial Japanese Government Railways for the solution of the freight congestion, as the result of a meeting held in Tokyo by the chiefs of the different sections, and a large number of new freight cars will be built during the present fiscal year.

The car problem came to a head last year when the accumulated cargo amounted to more than 500,000 tons and threatened to reach 600,000 tons. Even now the total amount of freight accumulated is said to be more than 450,000 tons.

According to the new scheme of relief the Imperial Government Railways order 1,500 freight cars from the Japan Rolling Stock Company, Nagoya; the Kawasaki Dockyard Company, Kobe; and the Osaka Railway Car Company, Osaka, on the condition that all those new cars will be completed and delivered to the Imperial Government Railways by the end of the present fiscal year, that is, by March next year, and that of the whole number, 250 cars will be delivered by the end of October this year.

Japanese R. R. Employees Get Higher Wage.—Beginning September 1, the Railway Board has decided to raise the salaries and wages of its employes, who get 40 yen or less a month. From September until March next or the end of the current fiscal year, about Y2,000,000 will be necessary for the raising of these employees' pay. The board began several months ago giving special allowance to each of its employees and that allowance will be continued this month. The authorities have decided to raise the salaries of the employees permanently, because otherwise they will not feel assured of their future financial position, and may seek more lucrative employment.

Railway Expansion in Malaysia.—Notwithstanding the turmoil in Europe, the British authorities in the Malay Peninsula have been steadily pursuing a progressive policy of railway extension which has been retarded only by the difficulty of obtaining supplies of ironwork from the United Kingdom.

Under the Treaty of 1909 which transferred the Malay States of Kedah, Perlis, Kelantan and Trengganu from Siamese to British suzerainty, the Federated Malay States authorities agreed to lend a sum of £4,000,000 (afterwards increased to £4,750,000) to the Siamese Government to enable them to extend the State Railway southwards to form connections with the Federated Malay States Railway at the frontiers of Kelantan on the east and of Perlis on the west. The work has made steady progress, and is rapidly nearing completion. On their part, the F.M.S. Railway authorities have been pushing on the extensions northward, through the western states of Kedah and Perlis; and recently Mr. P. A. Anthony, the general manager of the F.M.S. Railways, accompanied by some members of his staff and Mr. H. Gittins, the chief engineer of the Siamese State Railway, made the journey by train from Bangkok to Prai on the mainland, opposite to the Island of Penang, by way of Bukit Mertajam, the junction in Province Wellesley. The party was thus the first to make the journey over the new railway connecting Singapore and Penang with the capital of Siam.

The line on either side of the frontier cannot be considered complete, and may not be opened to general traffic till next year. A number of bridges and other masonry work remain to be completed on the Siamese side, and the final work will be taken in hand as soon as possible under present war conditions, with the necessary iron-work impossible to obtain from England. On the British side, only the iron-work of a few bridges awaits completion. Portions of the line have been finished in Northern Kelantan, while an extension of the existing F.M.S. Railway system has been made from the junction at Gemas, through the eastern State of Pahang northwards as far as Kuala Lipis, with a view of linking up with the Kelantan section as soon as opportunity offers.

The value of these railway extensions will be obvious to anyone who takes the trouble to look at the map of the Malay Peninsula. The railway will open up rich tracts of land for mining exploitation and tropical cultivation in a region which has already proved a valuable asset to the British Empire. Its commercial convenience will also be great, while transit for mails and passengers from Europe to Bangkok will be shortened by several days, and the sea journey up the Gulf of Siam—a nasty one in the north-east monsoon—will be avoided.

Shanghai Tramways Receipts.—The following is the Traffic Return of the Shanghai Tramways (Foreign Settlement) for August, 1917, and for 8 months ended August 31st, 1917, with figures for the corresponding periods last year:—

	August, 1917.	August. 1916
Gross Receipts ...	$ 130,422.08	$ 129,803.82
Loss by currency depreciation... ...	29,087.05	34,425.40
Effective Receipts ... ...Mex.	$101,334,03	$95,378.42
Percentage of loss by currency depreciation	23.58	27.99
Car Miles Run... ...	332,528	330,194
Passengers carried...	6,040,171	5,901,451

	8 Months ended 31st. August, 1917.	8 Months ended 31st. August, 1916.
Gross Receipts...	$ 1,048,762.66	$ 985,047.73
Loss by currency depreciation ...	233,403.01	259,727.60
Effective Receipts ... ... Mex.	$815,359.65	$725,320.13
Percentage of loss by currency depreciation... ...	23.57	27.99
Car Miles run ...	2,906,116	2,442,921
Passengers carried	47,618,085	43,752,997

SHIPPING

Japan's Shipbuilding Capacity.—The shipbuilding yards equipped with building berths for the construction of vessels over 1,000 tons in Japan numbered only 6 or 7 before the War, but have been increased to about 30, with some 90 berths either in use or construction. As there are several new dockyards under contemplation, the aggregate number of the building berths in Japan is likely to reach 100 in the course of this year.

According to an expert computation, the average capacity of these berths may be put at not less than 4,000 tons. In case of their capacities being taxed in full, about 400,000 tons would be put out at a time, provided all the necessary building material, and equipment such as boilers, engines, etc., be obtainable. Calculating the time for the completion of a ship to be 6 months, the total yearly output would be 800,000, which, when it is reduced to a practical basis, might be discounted by 20 or 30 per cent. At all events, granting that an adequate supply of material be available, the production of 600,000 tons (about 1,000,000 tons dead weight per year) would seem quite feasible.

As a matter of fact, Japan has about 50 vessels amounting to 200,000 tons under construction. But, if the supply of building material should fail, say in consequence of the American ban on export of iron material, the construction work would have to be brought to a standstill, or at best would be more or less delayed. Much depends on the supply condition of material, and on this account, what is called Japan's building capacity is, in a sense, on paper. In fact, the home products of iron material are put at 30,000-35.000 tons only per year, which barely suffice for turning out 70,000 or 80,000 tons.

Japan's Shipbuilding Supplies.—According to the latest investigation by the Mercantile Marine Bureau of the Communications Office into shipbuilding materials for the Japanese yards, those already contracted for, but not yet delivered are put at 321,000 tons and those on hand as about 100,000, making an aggregate of 421,000 tons distributed as follows: Plate, 288,000 tons; cold rolled steel, 124,000; boiler plate, 5,200 and bar steel 4,200 tons.

The Osaka Iron Works and the Kawasaki Dockyard Co. are said to have the largest stocks.

The number of vessels planned to be built and already officially sanctioned is 111 of 544,580 tons, and applications for 70 vessels of 441,737 tons have been filed for Government sanction, making a total of 190 ships of 976,317 tons. As against this must be equaled the 100,000 tons of materials on hand which is just one-tenth of the total and twenty percent of the present and urgent needs of Japanese shipyards.

New American Steamship Line.—The America-Asiatic S.S. Co. of San Francisco, is said to be preparing to inaugurate a monthly regular steamship service between San Francisco and Vladivostok, chartering three 6,000 tons class ships. They will engage in carrying general cargo, calling at ports in Japan and China. The first steamer was expected to set sail from San Francisco early in August.

N. Y. K. Buying Ships.—The Nippon Yusen Kaisha, Japan's biggest shipping firm, is now trying to purchase several ships at the home dockyards. Mr. Ginjiro Katsuta, a leading shipper of Kobe, reports that the Nippon Yusen Kaisha has just signed contracts with the Nippon Kisen Kaisha, which is financially backed by the Ruhara Mining Corporation of Osaka, to buy seven ships, 60,000 tons deadweight, worth approximately Y42,000,000, It is further reported that the Nippon Yusen Kaisha drew in favor of the Nippon Kisen Kaisha a check for Y8,400,000 to guarantee the bargain. This is probably the biggest shipping deal ever transacted in Japan except those with foreign buyers

The seven ships which are now being built at the Osaka Iron Works will be finished after June, 1918. They include: two 5,000 tons and five 10,000 tons. Coincident with this announcement it is also reported that the Nippon Yusen Kaisha will shortly increase its capital.

When the Osaka Shosen Kaisha increased its capital to Y50,000,000 early this year, which is Y6,000,000 more than that of the Nippon Yusen Kaisha, many leading shareholders of the Tokyo firm also advocated an increase in capital. Considering, however, existing shipping conditions, the board of directors of the Nippon Yusen Kaisha has turned down all applications advocating the increase of capital. All surplus profits have been turned into the reserve funds in order to effect an expansion after the war.

French Mail Seeks Loan.—It is reported in Japanese financial circles that the Messageries Maritimes Steamship Company of France is in negotiation with Tokyo bankers for the issue of a loan in Japan, which will be used by the company in paying for its purchases here. The purchase of hulls by foreign shipping companies in Japan since the war began is said to have amounted to more than Y70,000,000.

FINANCE

Changchun-Kirin Agreement.—The Kirin-Changchun Railway Loan Agreement will shortly be formally revised between representatives of the South Manchuria Railway Company and the Chinese Government, reports the Tokyo *Asahi*. Last fall, the Japanese in charge of the matter secured tentative agreement from the Chinese Government to revise the agreement in question. Owing to the opposition of Chinese parliament the matter was delayed, but the Chinese Government has given a pledge that it will take the responsibility as to that matter regardless of opposition of parliament.

Now that Parliament has been dissolved, the Japanese interested in the proposition have pressed for signatures on the agreement, and the Chinese Government has consented to sign it.

The terms and condition of the loan will be same as in the tentative agreement signed last fall. The amount of the loan is to be 6,500,000 yen, of which 2,500,000 yen has already been invested, so that additional amount of investment will only be 4,350,000 yen. The term of the loan will be 40 years. At first Japan wanted to made it a fifty-year loan, but a concession was made. For the concession made in the term, Japan is to get the right to manage the operation of the railway on behalf of the Chinese Government.

Belgium in on Chinese Loan.—According to a Peking despatch to the Tokyo Nichi-Nichi the French Minister has proposed that Belgium be included in the International Loan Consortium. A certain power is said to have objected to the proposition, but it appears to have been decided on the whole. Criticism has been heard over including Belgium, when America is not a member of the group.

Philippine Govt. Gains P-4,000,000.—An increase in internal revenue collections of four million pesos, is reported by Acting Collector Powell in a statement showing the revenues of the first six months of 1917 compared with those of the corresponding period of last year. Between January 1 and June 30, 1916, it appears, the sum of P16,739,933.73 was collected while during the same period of this year, P21,093,395.30 accrued to the public coffers. The total receipts derived from the assessment of the one per cent tax on gross receipts of merchants, manufacturers, and common carriers, were over two million pesos in excess of those of the first six months of 1916, which is an increase of 33 per cent. This is due partly to the increased prices of commodities and also indicates an increased volume of general business transacted. Income tax collections increased by 160 per cent. One hundred per cent of this is due to the double rate now in force, while additional time devoted by the bureau in the proper enforcement of the law yielded the other 60 per cent. There was an increase of 100 per cent in collections on business done by banks.

To the shortage of Philippine cigars and the publicity campaign waged by the internal revenue bureau in the United States is traceable a substantial increase in duties collected on cigars, amounting to over 100 per cent. Increased activity of the internal revenue officers resulted in a 60 per cent augmentation of fines and forfeitures.

Philippine Treasury Profits.—The operation of the treasury bureau during the fiscal year 1916, considered from a standpoint of commercial enterprise, resulted in a net profit of P98,091 as compared with P797 for the preceding year, states Insular Treasurer Fitzsimmons in his annual report. All of the receipts on account of interest on general treasury funds deposited with banks, being incidental to the operation activities of the bureau, were placed to its credit in order to present a proper showing of affairs. Reference is made in the report to the successful suit prosecuted by the treasurer against the Monte de Piedad, for the recovery of P80,000 belonging to the Spanish earthquake fund of 1863.

Manila Customs Collections Increase.—Characteristic of the prosperity which war times bring about is the showing made by the hureau of customs in the Manila collections for June just ended which are about P200,000 in excess of those for the same period last year, while the internal revenue collections on imported goods made by the the bureau during same period has exceeded the figures for the same month last year by about P70,000.

Big Profits of Philippine National Bank.—The net earnings of the Philippine National Bank during the first six months of the current year have been at the rate of 20% per annum on the total capital stock already issued, and after a meeting of the board of directors of the institution, it was announced yesterday that, in accordance with the provisions of the bank's charter, five per cent has been set aside in the reserve account, and a dividend has been declared to stockholders of record on June 30, of five per cent for the half-year.

According to the terms of a letter submitted by President Ferguson to the board of directors of the bank yesterday, the first six months of the present year have been exceedingly propitious for the institution of which he is the head. Since the inauguration of the bank, he states, no pecuniary loss of any sort has been suffered by that institution in any of its transactions, and the total amount of paper in the bank past due for a period of from one to 45 days, on June 30, was P2,700, none being past due for a longer period. In conclusion he says that "no paper has been renewed by the bank because of failure to or inability to make payment when due, and all past due paper is collectible."

Philippine Public Works Loans.—The Philippine government loan program designed to aid provinces and municipalities in the construction of public buildings, schools, markets and bridges, for 1917 is one of the largest and most comprehensive for many years.

Plans for the distribution of the insular funds available for such loans are now practically completed and among the authorized loans are the following: Rizal province for a bridge on the Malabon-Navotas road, P25,000: La Union province for the Baloan bridge, P60,000: Occidental Negros for the Binalbagan-Sumag bridge, P54,000 and Calumpit, Bulacan province, for a central school, P36,000.

Japan's Gold Holdings.—The last week ending August saw another immense increase in the gold holdings to Japan's account. According to the official returns Japan's gold hoardings are Y939,000,000, an increase of Y15,000,000. Of the total Y317,000,000 belongs to the Imperial Treasury and Y622,000,000 to the Bank of Japan. Only Y389,000,000 is kept at home, the remaining, Y550,000,000, being kept in London and New York.

Japanese Send Million Dollars Home.—One-third of a million dollar increase in international U. S. money orders sent to Japan by Japanese residents of the territory is shown for the fiscal year which ended July 30. Figures made public yesterday by Assistant Postmaster W. C. Peterson show the total value of money orders certified to Japan from the Territory of Hawaii for the fiscal year 1916-17 to be $1,196,038.30, against $861,868.05 for 1915-16.

MINES

Changsha Mineral Exports.—The most important local article of export from Changsha during 1916 was antimony, which, like many other native products, though shipped in the first instance to Hankow, eventually was exported abroad. The export of antimony regulus shows an increase of 8,673 piculs as compared with the figures for 1915, and although the shipments of antimony, crude and ore, show a decrease, this is probably due to the local smelting started in 1915, as mentioned in the report for 1915. The export of antimony refuse, which requires more skilful handling than rich ores to obtain paying results and can scarcely be worked economically by the local smelting plants, shows an enormous increase, the figures being nearly three times those of 1915.

The antimony market opened with a good demand at about 900 Hankow taels per ton for regulus (with proportionate prices for other forms of antimony), and the quotations remained between 800 and 900 taels till about the end of April, when the demand suddenly ceased on the flooding of the world's market by the enormous production of Bolivia (South America), and prices dropped steadily to 450 taels at the end of May and 250 taels at the end of July. From that time there was little change, and the year closed with prices varying from 200 to 250 Hankow taels per ton of regulus.

In 1914 Bolivia had an output of only 186 tons of Antimony ore, but owing to high prices, good demand, and rich deposits this was increased in 1915 to 17,923 tons of ore, at an average percentage of about 60 per cent. metal, which was all taken up. However, when Bolivia further enomously increased its production in 1916, the market was glutted and prices came down with a run. Changsha suffered severely, as no long-period contracts had been made; many mines had to be closed, and holders of stocks lost heavily. Prospects for the future are bad, for, though prices

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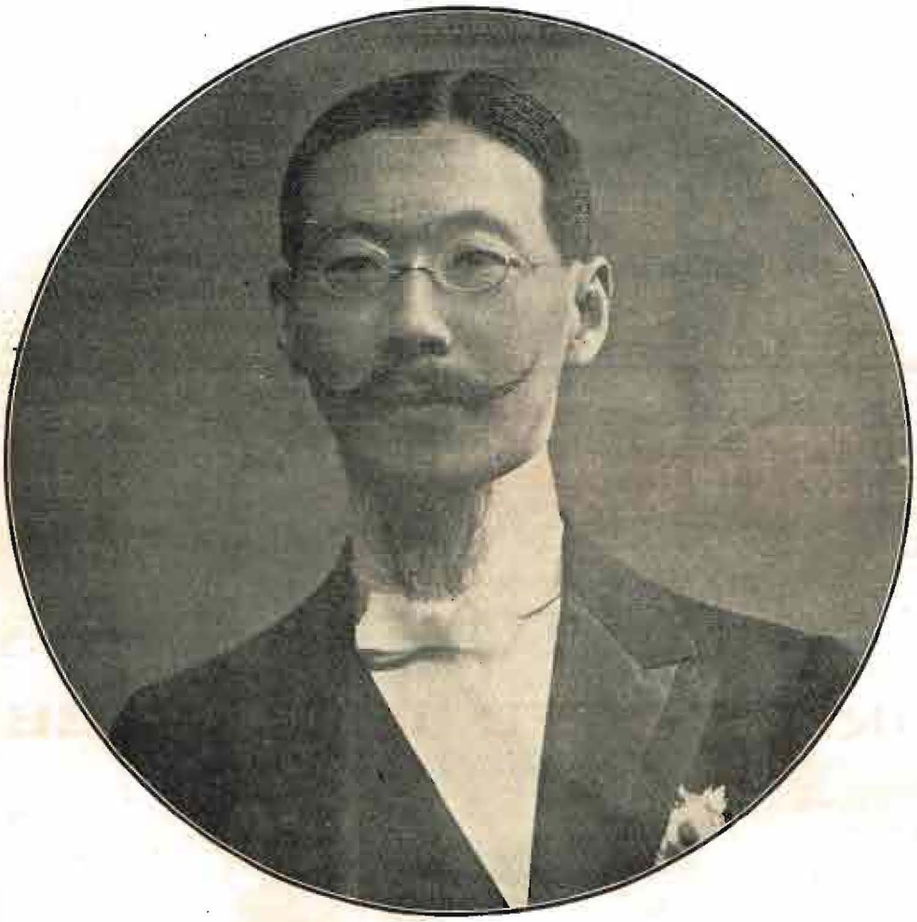

His Excellency LU CHEN HSIANG

PRESIDENT CHINA'S WAR COMMISSION

SOME CHINESE RESOURCES AND PRODUCTS OF AGRICULTURE, MINING AND INDUSTRY

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ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

Canton-Kowloon Line.—Mr. H. P. Winsloe, Manager of the British section of the Kowloon-Canton Railway, says in his annual report on the working of the line in 1916:—

The expenditures of all departments have been carefully watched, and with the exception of the excess of $10,020.58 under locomotive expenses, subhead fuel, which was due to an advance in the price of coal, the estimates have not been exceeded, and this sum was reduced to $4,059.76 by savings under other heads of the locomotive expenses. In spite of the increased cost of coal the percentage of expenditure to gross receipts shows a decrease of 5.45% when compared with the previous year. The working expenses amounted to $296,691.63 against an estimate of $313,905.

The revenue derived from through passenger traffic was $192,858.29. It was not to be expected that the estimated figure of $250,000 would be reached in view of the unsettled conditions prevailing in the Kwangtung province.

The through goods traffic amounted to $18,407.50 or about 34% more than the previous year and it is hoped that with the establishment of the goods agency this traffic will increase.

The local passenger receipts show an improvement on 1915. The increase in first and second class is largely due to the golfing traffic.

In February the star ferry rates for railway passengers using the ferry were considerably raised and the increase was dated from 1st February, 1915. During the year a sum of $20,266.09 was paid to the company, $5,623.64 of this amount being in respect of traffic from 1st February, 1915 to 29th February, 1916.

The local goods traffic revenue is slightly below that of 1915. The increase under sundry traffic is due to the inclusion of rent collected in respect of reclaimed land let at Hung Hom.

Compared with 1915 the gross receipts for the year were $366,215.67 as against $343,769.08 or an increase of $22,446.59 and the working expenses $296,691.63 or $574.34 less. The balance after paying working expenses stands at $69,524.04 or $23,020.93 more than the previous year.

Chaochow-Nanchang Project.—According to Japanese reports negotiations are going on between the Chinese Government and a Japanese company interested in Chiua for a loan of about Y.100,000,000 for the construction of a railway between Chaochow (Swatow), Kuangtung, Nanchang, in Kiangsi. The projected line would be 200 miles long, reports the *"Hochi,"* which paper says that, as many difficulties are in the way, it will take some time before the negotiations are concluded. This project would connect the Yangtze at Kiukiang with the sea at Swatow, that part of the railway from Kiukiang to Nanchang having been completed by a Japanese company some time ago. As Swatow lies almost due south of Kiukiang, the proposed line would probably pass through a good protion of Fukien and Kiangsi provinces.

Repairing Flood Damage in Honan.—According to special correspondence of the China Press at Kaifeng, after weeks of interruption to traffic on account of floods, trains are now running regularly on all Honan lines except from Cheng Chow to Peking. There is only one train daily on the Lung-Hai Railway east and west to Hsuchowfu, the night train having been taken off. Travelers from Hankow to Peking must change at Hsuchow for Tientsin. The damage on the Peking-Hankow line was so serious that the engineers estimated late in August that it would be two months before through traffic can be resumed. Between kilometers 193 and 295 there are innumerable breaks caused by embarkments and bridges being washed away. The long bridge over the Shaho is down and one of the 90 feet iron spans was carried a mile down the river. Between kilometers 503 and 557 there were many breaks and the bridge near Shuntehfu was damaged.

Ssupingkai-Chengchiatun Railway.—Mr. M. Takenaka, formerly of the South Manchuria Railway Co., who was confirmed as Traffic Manager of Ssupingkai-Chengchiatun Railway, stated recently that owing to the assistance willingly given by the S. M. R. Co., the construction work of the Ssupingkai-Chengchiatun Railway has made satisfactory headway and that traffic between Ssupingkai and Pamiencheng will be commenced in the middle of October. The whole line up to Chengchiatun may be opened to traffic during the present year. The agreement with the S. M. R. Co., for borrowing about 50 cars, as requested by the Ssupingkai-Chengchiatun Line, was signed on September 6. With the starting of traffic, a Traffic Department is to be established with a staff of about 150 officials, etc. Six officials are to be engaged to look after operation of trains, rolling stock, traffic, etc. As for the other officials, etc., Chinese have been appointed. Stations are to be erected at Pamiencheng, Fuchiatun, and Sankiangkou, and in course of time at Ssupingkai and Chuchiatun. Work has been taken in hand already at Pamiencheng. Pending the formal opening of traffic, passenger accommodation by construction trains has been inaugurated, the traveling section to be extended as the costruction work progresses.

Amalgamation of Siam's Railways.—The Siamese Northern and Southern Railways, which up to the present time have been under separate management, have now been placed under a commissioner general of State Railways, and at the same time Mr. Henry Gittins, controlling engineer of the Southern line, has been appointed adviser to the new office. The Prince of Kambeng Bejra, who about two years ago made an extended visit to the United States, has been appointed commissioner general of the amalgamated railways.

SHIPPING

Hongkong Shipping Report.—In spite of war conditions and of the restriction of tonnage the world over, the total tonnage of shipping entering and clearing Hongkong in 1916 exceeded the entries and clearance of 1915 and amounted in actual tonnage to substantially the pre-war record of the port. The total number of vessels entering and clearing during the year was 642,794 of 36,381,457 tons, as compared with 531,602 vessels of 33,884,919 tons in 1915, and 517,439 vessels of 36,756,951 tons in 1914. Of this shipping, 48,350 vessels of 22,308,311 tons engaged in the foreign trade, as compared with 50,148 vessels of 22,515,023 tons in 1915. Of the entries for last year of vessels in the foreign trade, 30.8 per cent were of British ocean-going steamers, as compared with 32.7 per cent in 1915; 30.7 per cent foreign ocean-going vessels, as compared with 31.1 per cent; 18.5 per cent British river steamers, as compared with 17.8 per cent; 4.7 per cent foreign river steamers, as compared with 4.1 per cent; 1 per cent steam launches, as compared with 1.1 per cent; and 14.3 per cent trading junks, as compared with 13.2 per cent in 1915.

Korean Shipping Increase.—A recent press report states that the total tonnage of ships registered in Chosen now amounts to approximately 47,000. This constitutes an increase of some 32,000 tons since the revision of the shipping regulations in November, 1915. During 1916 nine vessels aggregating 24,156 tons were purchased from the United States, South America, and Norway, and registered in Chosen. Registry of three vessels of some 13,053 tons was transferred in the same year from Manchuria.

Korean Harbor Works.—Among items incorporated in the supplementary budget for Chosen introduced into the Japanese Diet are: Extension of Pyeng Yang colliery, $626,097; railway construction in Kankyo, $697,900; Fusan Harbor works, $159,520; and customs construction, $34,895.

The construction of the Chemulpo Harbor works has been making satisfactory progress lately, and it is reported that work on two lock gates will shortly be commenced. Mr. Benjamin B. Dumoille, an American civil engineer who was connected with the construction of the Panama Canal, has been engaged for this work by the Public Works Bureau of the Government General and arrived in Chosen last month. It is expected that the work on which he is engaged will be completed in about six months.

Shipping Operations in Bangkok.—Negotiations have recently been completed by the British India Steam Navigation Co. (Ltd.) for the lease of a site in a prominent shipping center on the river front in this port, with a view to the erection of spacious godowns and wharves for the accommodation of its steamers, the number of which has been considerably augmented during the last two or three years.

Osaka's 15 Shipyards Busy.—In Osaka there are at present fifteen shipbuilding yards. The ships now being built there number thirty-seven, totaling 76,316 tons. Of the thirty-seven ships thirty are steel and seven are wooden. The steel vessels range from 1,000 to 12,000 tons, but the wooden are from 400 to 1,200 tons. In these shipbuilding yards in Osaka 9,550 workmen are employed, an increase of two thousand since the end of last year.

Launchings in Japan.—Three steamers were launched last month, a 5,600 tons vessel built at the Kawasaki Dockyard; the *Noro*

seems to be the ordinary method of transporting small children around west China.

Miscellaneous Means of Transport

Among other means of transportation along this great highway we found in the Wei Basin a number of wheelbarrows supplementing the carts in carrying the wheat shocks and other farm products from the fields to the village threshing floors. It must be remembered that in this section of China the farming population lives in walled villages.

For passenger traffic in Shansi and Shensi mule litters, carts, saddle horses and mules, and donkeys, are common. The better class people, including the officials, prefer to ride in closed Peking carts, in mule litters, or on horseback. These mule litters cost but five cents per mile, and include two mules and a litter, an extra mule for baggage, a donkey for the servants to ride, and a coolie to act as muleteer. The wealthier women use the closed carts, but one often sees a bound-footed peasant woman, dressed in silks and with fancy hair ornaments, perched on a donkey, while her son walks by her side. The poorer people who can spare a few cash often ride in open carts, especially the women who cannot walk because the atrocious custom of foot-binding has made cripples of them.

Along the southern section of the road, where no wheeled vehicles are to be seen, sedan chairs, horses, mules, and donkeys are the common means of transportation for human beings. A sedan chair costs but three cents per mile and includes, besides the four chair coolies for the chair itself, two extra coolies for baggage.

By taking a mule litter, one can go from Taiyuanfu to Sianfu, a distance of 408 miles, in sixteen days. On a pony one can make the same trip in twelve days. To go from Siangfu to Chengtu, a distance of 720 miles, if carried in a sedan chair with four chair coolies, would take twenty-four days, making an average of thirty miles a day.

An Enormous Flow of Products

As already stated, the amount of freight carried over this Great Western Highway each year is enormous, especially when we consider the crude and expensive methods of transportation in use. In Shansi the bulk of the traffic seems to go northward. In June we passed hundreds of carts and pack animals bound northward, laden with flour, paper, salt, coal, red kiaoliang, rape, hemp, rape seed oil, and other native products. One caravan of donkeys was laden with lumber, each animal carrying two locust timbers about fifteen feet in length and one foot in diameter. During one day we saw about two hundred tons of cargo moving northwards. Practically all of these goods were destined for Taiyuanfu, part for consumption there, and part for transhipment north for Peking and Tientsin.

In the Wei Basin we passed as many as twenty or thirty carts at a time, laden with hides bound from Kansu to Honanfu, there to connect with the railway for shipment to Hankow. Undoubtedly much other native produce from the Wei Basin and Kansu found its way to the Peking-Hankow Railway in a similar manner. As the Wei Basin harvested its banner wheat crop in June, nearly all of her means of conveyance were then pressed into service, hauling the wheat shocks from the fields to the village threshing floors. Sianfu is the great distributing center for this section of China. It is a city of 200,000 people and one of the most ancient in the entire Chinese Republic. As the Great Highway passes directly through the city there is a constant stream of carts and pack animals, going in and out of the gates, the distance between the east and the west gates being three miles. Along either side of this stone-paved city thoroughfare, for the entire distance of three miles, there is a continuous row of one and two storied shops and inns. These, with the extensive traffic on the streets, give to the city a very businesslike appearance.

In the mountains along the southern section of the Great Western Highway, we passed hundreds of coolies bound northward, carrying loads of dried tobacco stalk, sugar, salt, tea, notions, paper, matting, straw hats, umbrellas made of oiled paper, and medicines, mostly from Szechwan, destined for Kansu and Sianfu. Those going south carried cotton from the Wei Basin, and licorice root and other herbs, and wool from Kansu, destined for Hanchungfu. We also passed donkey caravans going northward, laden with iron bars, silver, paper, sugar, salt, and dried tobacco stalks. At one place we passed a caravan of thirty donkeys each laden with 250 pounds of pig iron traveling thirty miles a day and bound from Hanchungfu to Lanchowfu, a distance of 700 miles.

How Costs of Transport Are Piled Up

The average cost of cart transportation in Shansi is five cents a ton mile. In the Wei Basin it ranges from four and a half cents to eight cents a ton mile, depending upon the volume of business.

The carrying coolies, who monopolize the traffic over the southern section of the Great Western Highway are paid seven cents a ton mile. We passed upon this road as many as three hundred of these coolies in one day—that is, within a distance of thirty miles—each carrying an average at least of 125 pounds a distance of fifteen miles a day. Thus to transport these twenty tons a distance of fifteen miles requires three hundred men working a whole day, and costs $21. One ordinary freight car in America can carry this amount the same distance in one hour at a cost of less than one tenth of this amount. Here in western China a laborer costs six or seven cents a day, yet to transport one ton of wheat over a thousand miles of this Great Western Highway traversing Shansi, Shensi, and Szechwan provinces would cost at the very least $50. Contrast with this the cost for wheat transportation by rail from Chicago to New York for transhipment to Liverpool, which is about one seventeenth of the cost in western China, where labor is thirty times as cheap but where it would require fifty or sixty days to cover the distance done in America in three.

Yet despite what would be considered absolutely prohibitive transportation rates in America, there are, as we have already noted, to be seen daily on this great highway in western China thousands of carts, thousands of pack animals, and thousands of carrying coolies, engaged in transporting these hundreds of tons of cargo. It is difficult to imagine a people in greater need of railways than these along the Great Western Highway. Without proper facilities for marketing their produce, they are unable to establish credits for themselves in other parts of the Republic, thus having nothing to draw upon in times of drought. Hence when a famine strikes these provinces it strikes hard; Shansi lost half of her population in the famine of 1878, and Shensi lost nearly half of hers in the famine of 1901. Shansi and Shensi have produced the largest wheat crops in their history in recent years, amounting to over 50,000,000 bushels; but with prices ranging from twenty-five to thirty cents a bushel, it is difficult to find an outlet for this enormous crop, for it costs half a cent a pound to transport it a distance of but 200 miles. It costs $5 a ton to transport coal a distance of 100 miles—and there is more coal in Shansi and Shensi than in Pennsylvania.

RAILWAY TRAFFIC INTERRUPTED

The heavy rains at the end of July and early in August caused unprecedented floods, which washed away considerable sections of the embankment of the Peking-Hankow Railway. Traffic was stopped and it is estimated that repairs cannot be effected before the end of October.

A report by one of the engineers of the Peking-Hankow Railway recommends that the reconstruction of the Yellow River Bridge be proceeded with during the next three years.

Mr. K. Y. Kwang, the ex-engineer-in-chief of the Peking-Kalgan-Suiyuan Railway, has been appointed chief engineer of the northern section of the Tientsin-Pukow Railway. Mr. Kwang is one of the foremost of China's railway engineers and has gained an excellent reputation for efficiency and integrity.

In the center of the lot are the large ward units. Each unit consists of three wards of twenty-five beds each. The basements of the buildings contain the grocery, dry goods, and surgical supply stores. Each ward has a solarium to the south, and open air space where beds may be moved, or where convalescent patients may walk. The large open ward has sixteen beds, and there are smaller rooms with five, and two, beds, and two with one each. The service rooms, baths and toilets, and diet kitchens are modern in every respect. Each ward has also a laboratory and a room for administering treatments and for class exercises.

South of the Administration Building is a private pavilion, with nineteen rooms for private patients, each connecting with a bath. In the basement of this building is the foreign kitchen and dining rooms for the foreign staff. The power plant is located in the northeast corner of the lot, and houses a steam heating plant, electric light plant, refrigeration plant, gas plant, wells and pumps for water supply, laundry, and servants' quarters.

The buildings alone are estimated to cost about $2,000,000 gold.

AN EXAMPLE OF THE MASSIVE CHINESE BUILDINGS WHICH COMPRISED THE PRINCE'S PALACE, AND WHICH ARE BEING DEMOLISHED TO MAKE ROOM FOR THE NEW COLLEGE. THE BUILDINGS PROVIDE GREAT QUANTITIES OF MATERIAL WHICH WILL BE USED IN THE NEW STRUCTURES. THE PALACE WAS ERECTED SOME 200 OR 300 YEARS AGO, IT IS SAID.

Returned Chinese Students

Filling High Positions in China

A recent census of the Chinese in Peking who are returned students from foreign countries—those who have studied in Europe, America, and Japan—shows that there are nearly 950 accounted for in the metropolis and that of these 806 are employed by the government departments, while most of the others are teachers in schools and universities, and a few are in business. They constitute 23.2 per cent of the total number of departmental officers, experts, and clerks, and in certain departments, such as the department of agriculture, where special training is particularly valued, they number nearly half the total roll of employees.

America has a national interest in the welfare of the returned students, for that part of the Boxer Indemnity remitted in 1908 is being spent by the Chinese Government in American scholarships for Chinese students, and the Tsing Hua College in Peking, which prepares students for foreign universities, is kept up out of the same fund. This has not only been the direct cause of taking many young Chinese to America, but it has also stimulated the emigration of ambitious and scholarly young Chinese to many lands, and has undoubtedly had its effect upon China's attitude towards Occidental nations and their civilization. At the time that America announced her intention of returning the surplus indemnity funds, the Chinese were profusely grateful, and America's moral stock went up rapidly and permanently in China. Other nationals in the Orient felt that America had done something very shrewd and businesslike, for the nation not only won the gratitude of the Chinese people, but also undertook to train some hundreds or thousands of promising young Chinese, who would be almost certain to return to official positions in their native land, and who would carry with them a prejudice in favor of America, American goods, and American mechanical equipment for any public work. Time has since shown that, whether the unique decision of the United States Government was inspired by sentimental and benevolent motives or by business foresight, students returned from America exercise an influence in governmental matters and contrive to find good government jobs for themselves, of which the returned students from all other nations are envious.

Out of the total number of returned scholars now living in Peking considerably more than half are graduates of Japanese schools. Their influence in Japan's favor is not trifling. Japan is close at hand, few restrictions are placed upon immigration, and both living and schooling are cheap. To the poor student it is the only resource outside his own country, where educational facilities along Western lines are still embryonic. A Japanese education, whatever its merits may be, seems to be accepted by those of little means as a less attractive but necessary alternative when they cannot devise means of reaching Europe or America.

Japan has returned to Peking 522 students. Of the balance 154 are American graduates, 99 British, 52 French, 47 German, 38 Belgian, 9 Austrian, 7 Russian, 1 Spanish, and 1 Turkish, in addition to which there are many who have pursued nondescript courses in their travels in many lands. America, though notoriously expensive, is second to Japan in the number of her graduates. University students in America often wonder, no doubt, what becomes of the Chinese who go through the classical and technical courses with them, taking it all so seriously, looking with such large eyes upon the strangeness of Occidental life, and disappearing, seldom to reappear, the day after Commencement. It might be some satisfaction to these people to know that their classmates, in a big percentage of cases, return and step into fat government jobs—fat as things are reckoned in China—with lofty titles and stilts of dignity, jobs which in the West fall to the talented and fortunate after a lifetime of hard work and political warfare. It has not always been so in China. Under the Manchus the students were used when their technical training made their services indispensable, but the sage old Confucian scholars who sat in the high places, with the rust and dust and mold of four thousand years heaping up about them, mistrusted this "fly-up-the-creek" breed that came strutting back from abroad in barbarous clothes, gibbering in barbarous tongues, and shouting diatribes at all that the traditions of ages heaped upon ages made holy and sacred.

Among those who fail to get appointments or to hold them, there is still some talk of unfair discrimination, and those who receive nothing better than clerkships complain that their salaries are less than were their spending allowances in America. Whatever there may be in these plaints, it is certain that the case of the students in this generation is better than it was in the days when Tang Shao-yi and his colleagues returned. In the present administration Dr. Chen Chin-tao, Minister of Finance, is a graduate of the University of California, and a

Ph.D. of Yale. The President's secretary, Kuo Tai-chi, is a graduate of the University of Pennsylvania. Wu Chao-chu, Councillor of the Ministry of Foreign Affairs, began his education in the Atlantic City High School when his father (Dr. Wu Ting-fang) was Minister to the United States. C. T. Wang, Vice-Speaker of the Senate, studied law in America for three years. Hsiang Hsiang, councillor of the Ministry of Finance and a member of the Bank of China's executive committee, is a student from Columbia. Ex-Minister Chen Chen-hsien is a graduate of the University of California. Chow Tze-chi, who recently resigned from the Ministry of Agriculture and Commerce, because of his affiliations with the monarchists, was a leading political figure in Peking during Yuan Shih-kai's régime. He is an American returned student and he was also an envoy to America in 1910, when he accompanied the Chinese Naval Mission. A complete census of all the returned students in China has never been taken, and the list of those in Peking is not complete, but such as it is, the students make an excellent showing.

Among all the returned students holding office in Peking, the oldest is 67 and the youngest 21, while the average seems to be about 33. In the Ministry of War 34.1 per cent of the officials are returned students, in the Ministry of Education 28.8 per cent, in the Forestry Bureau 32.2 per cent, in the Ministry of Commerce 48.6 per cent, in the National Supreme Court 40 per cent, and in the Ministry of Communications 46.7 per cent. The greater part of these students, contrary to general preconceived ideas both in China and abroad, are not from Canton or its neighborhood, but from the province of Kiangsu, that is, from the Shanghai-Nanking district. Kiangsu has 208 returned students in Peking, Chekiang 143, Hupeh 117, and Canton, or more exactly the province of Kuangtung, 79.

A comparison of the studies pursued by these students abroad is extremely interesting, showing, as it does, the trend of Chinese ambition and young China's idea of usefulness. Of the students in Peking 139 devoted their time abroad to the study of military affairs, 56 went in for engineering, 79 for law, 61 took commercial courses, 34 studied agriculture or forestry, 30 studied finance, 28 studied medicine, and the rest are scattered through a score of special branches nearly all more or less technical. Out of the whole lot only 15 were interested in literature and 1 in art. Another interesting fact is that from more than 950 who have spent an average of four years abroad, only 135 are now Christians: this in spite of the fact that a very fair percentage received their preparatory training in missionary schools in China.

The following is a list of the students returned from America, now resident in Peking. As it was completed before the reconvocation of the National Assembly and the recent changes in the government, many names of government officers who are now temporary residents are omitted:

Wang Pi, Cornell M. E., Peking-Kalgan Railway.
Wang Wen-huei, 34, Chief of Postal Department, Ministry of Communications.
Wang Ren-fu, 32, Harvard B.A., Professor in Peking Government University.
Wang Chen-fu, 27, Columbia M. A., Fengtien Coal and Iron Mines.
Wang Chen-tse, Peking-Kalgan Railway.
Wang Chien-tse, 37, California B. Sc., Prof. Peking Government University.
Wang Yin-tse, 33, Chicago and Harvard, Salt Gabelle.
Wang Chia-luen, 33, New Bradford, Commissariat Dept., Ministry of War.
Wang Chin-chung, 33, Illinois and Yale, Dept. Chief, Ministry of Communications.
Wang Fu-chang, 44, Junior Secretary of Foreign Office.
Wang Shao-yin, 26, Col. School of Mines, Prof. Peking Govt. University.
Wang Lin-kuo, Ex-Commissioner Foreign Affairs, Tientsin.
Pien Fu-sun, 31, Brown, Bank of China.
Pien Shou-sun, 32, Brown, Chief Accountant, Bank of China.
Wu Chao-chu, 29, Atlantic City High School, Councillor Foreign Office.
Chu Fu, 26, National Oil Administration.
Chu Wen-chin, Cushing Academy, American Board Mission School.
Chu Wen-hun, 28, Chinese Y. M. C. A.
Chu Chao-hsin, 37, Columbia, Senate.
Chu Shen-en, 38, Translation Bureau, Ministry of Finance.
Chu Tsu-hung, 34, Penn. B. Sc. Senior Clerk, Ministry of Communications.
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Yuan Chih-tao, 33, Civil Dept., Ministry of Justice.
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Yu Chien-fu, 31, Ministry of Navy.
Wu Nai-chen, 35 California M. A., Dept. Chief, Ministry of Finance.
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Wu Ying-ku, 59, Chief Accountant, Ministry of Communications.
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Ho Ling-yi, Dartmouth. Prof. Tsing Hua College.
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Li Kuo-chi, 30, Harvard M.A.
Li Min-ho, Wisconsin, Ch.E., Han Yang Iron Works.
Shao Chiang-kuang, 33, Junior Clerk, Ministry of Finance.
Ju Jen-hao, 34, Harvard B.Sc., Bureau of Rites and Ceremonies.
Li Kung, Peking Industrial and Engineering College.
Chin Tai, 33, Harvard B.A., Compilation Bureau.
Chin Pang-chen, 27.
Chou Tien, Cornell M.E., Ministry of Agriculture and Commerce.
Chou Tze-chi, 38, Ex-Minister of Agriculture and Commerce.
Chou Szu-chin, 24, Yale, Prof. Peking Government University.
Chou Kuo-hsien, 32, Chicago, Commissioner, Ministry of Finance.
Chou Yi-chung, 33, Yale D. Litt., President Tsing Hua College.
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Hu Hung-yu, 28, Penn., Railway Accounts Dept., Ministry of Communications.
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Ma Ying-tse, 33, Ph.D., Ministry of Communications.
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Sze Shao-chi (Alfred Sze), Cornell, Minister to England.
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Hsu Chuan-hsiang, 35, Yale Ph.B.
Hsu Chun-ching, 38, M.A., President University Preparatory School.
Hsu Wei-chin, 35, Chicago Ll.B., Supreme Court.
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Lu Mou-teh, 33, Ohio M.A , Ministry of Education.
Lu Pao-kan, 31, Ministry of Agriculture and Commerce.
Hsia Yuan-piao 32, Prof. Peking Govt. University.
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Chen Tsai-shen, 37, Columbia M. A., Prof. Methodist University.
Chen Tung-shou, 37, Illinois M.A., Ministry of Communications.
Chen Huen-lai, 32, M.A., Prof. Peking Govt. University.
Chen Tao-yuan, Salt Gabelle.
Chen Fu-hsi, Cornell B.A.
Chen Wei-ping, 40, Boston Ph.D. Teaching.
Chen Chin-tao, Yale Ph.D., Minister of Finance.

Sun Hun, 36, Harvard M.A., Bank.
Sun Yuan-feng, 33, Bank of China.
Sun Chia-lo, 31, Ministry of Communications.
Sun Pao-chien, 30, Peking Telephone Company, Ministry of Communications.
Tang Yu-hen, 31, Ministry of Agriculture and Commerce.
Tang Yu-liang, 27, Princeton M.A., Prof. Tsing Hua College.
Tang Yung-tse, 28.
Wei Yi-pei, 32, Cornell M.E., Ministry of Communications.
Yao Chun-ling, Banque Industrielle de Chine.
Tsia Chung-lin, 26, Wisconsin B.A., Tung Wei Industrial Co.
Ling Chih-hung, 28, Stanford, Ministry of Interior.
Kao Lun-chen, 31, Ministry of Communications.
Tseng Kuang-hsiang, 30, Penn. M.A., Ministry of Communications.
Huang Pei-cheng, Cornell M.A., Ministry of Agriculture and Commerce.
Huang Chin-hsia, 29, Columbia M.A., Peking Normal College.
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Chang Tsu-shun, 32, Cal. B.Sc., Min., Agriculture, Commerce.
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Chang Cheng-chi, 28, U. of Penn., Board of Audit.
Chang Hsin-liang, 30, M.A., Ministry of Finance.
Chang Chuan-yang, 27, Cornell M.E., Prof. Peking Govt. Uni.
Chang Yu-chuen, 37, Yale LL.M., Ministry of Foreign Affairs.
Chang Teh-hsi, Salt Gabelle.
Feng Ching-kuei, 37, Cornell Ph.D., Prof. Peking Govt. University.
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Hsu Tsung-han, 35.
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Mei Chi-ming,
Mei Ti-chi, 37, Worcester M.S., Prof. Tsing Hua College.
Yeh Ku-liang, 35, Secretary of Foreign Office.
Fei Chi-hou, 33, Yale M.A., Chinese Y. M. C. A.
Fei Hsing-jen, 29, Yale M.A., Teaching.
Tang Sung, 36, Michigan B.A., Hen Feng Cotton Mill.
Cheng Kung-yin, 31, California M.S., Min. of Communications.
Wen Tsung-yu, 36, Prof. Peking Govt. University.
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Hsiang Hsiang, 37, Columbia M.A., Ministry of Finance.
Yang Wen-lien, 38, Albany, Board of Audit.
Yang Yin-chung, 40, Penn. B.S., Prof. Tsing Hua College.
Yang Yin-chan, 39, Bureau of Rites and Ceremonies.
Yang Pao-ling, National Conservancy Bureau.
Yang Yin-hang, 39, High Procurate.
Yang Yin-yueh, 27, Wis. M.A., Ministry of Communications.
Yu Chen-yung, 27, Prof. Tsing Hua College.
Lei Chung-yun, 36, Kentucky C.E.
Tung Yuan-chung, 38, Penn. M.S., Ministry of Communications.
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Chuen Tien-yu, Ministry of Communications.
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Liu Chi-chih, 30, Wash. B.A., Ministry of Agriculture and Commerce.
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Tan Huai, Bank of China.
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Lo Wei-chiao, 27, Ministry of Navy.
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Ku Teh-ching, Technical Expert, Ministry of Communications.

RESTRICTED SUPPLY OF ELECTRIC CURRENT AT HONGKONG

A public service corporation rarely is able, as the result of a year's business, to declare a dividend of 30 per cent on its capital stock, place one sixth of the amount of its paid-up capital to increase its reserves, write off its plant account more than one third of the amount of its capital stock, and be compelled to call upon its patrons, the public, not to use its product so freely. Nevertheless, according to Consul General George E. Anderson, this is the record of the Hongkong Electric Co. (Ltd.), which supplies electric light and power for the principal portions of the colony as distinct from another concern which serves Kowloon and the mainland of the colony. The unusual business condition arises from the great increase in the use of electric light by Chinese residents of Hongkong, and from the inability of the company to obtain the equipment needed to complete a new plant it has had under construction. Apparently no effort has been made by the concern to get the equipment in the United States.

There has been such an increase in the demand for current during the past year that the company announced some time ago that it would receive no new applications for electricity after the first of January, this year, until its new plant was completed and it was in a position to care for the new business. In spite of this fact, however, the demand on the company for service has increased to such a point that it has been compelled to advertise in the newspapers asking patrons to use current sparingly between the hours of 6 and 10 p.m. daily.

The company's financial returns for the past year, as set forth in the report to the stockholders at the annual meeting on May 5, showed net profits amounting to $509,941, to which is added $110,558, the balance brought forward from the last account, making a total of $620,499 available for appropriation, disposed of as follows, with the amounts in Hongkong currency (dollar=$0.63 United States currency): To pay a dividend of 22½ per cent, $2.25 per share on 60,000 shares, $135,000; to pay a bonus of 75 cents per share, $45,000; to place to reserve, $100,000; to write off plant account for depreciation, $175,000; to write off new property account for depreciation, $40,000; to write off furniture account for depreciation, $392.10; to pay a bonus to staff, $11,357.15; to carry forward to next account, $113,750.11; total, $620,499.36.

undertake work calculated to provide the Yuntingho with a separate outlet to the sea. At present it uses the Hai-ho, which is incapable of carrying all the flood waters of the rivers pouring into it, and which must necessarily silt up in course of time, despite the dredging work being carried on by the Hai-ho Conservancy Board, by the very fact that the onrush of detritus in times of heavy rains is overpowering. The capacity of the Hai-ho is but one fifth of that of the Yuntingho itself, so the advantages of a new opening are obvious. "In the first place," as Mr. Vanderveen says in his report to the Government in 1916, which supplements a previous report in 1915, "the Haiho will be freed from the enormous quantities of silt brought down at present, and the bar at the entrance, at present such a severe hindrance to shipping, will, if it does not gradually disappear, become much smaller. In the second place the outlet can be made sufficiently large to cope with the volume of water brought down by the Yuntingho during freshets, and in addition the new course, leading as it would through the low country known as the French Marshes, or Tahotien, could be utilized by systematic dyking to raise all of the low-lying area and so make it valuable agricultural land. If in the meantime afforestation is taken in hand the silt problem will, long before the new river bed has been raised too much, have ceased to exist and the Yuntingho will henceforth have no more vices than any other river." In his concluding paragraph, Mr. Vanderveen expressed the opinion that only on the lines suggested could the trouble of the rivers be averted. "Other methods may give temporary relief," he pointed out, "but in the long run they will prove a failure and the same old problem will have to be faced anew, after millions have been spent in vain. Moreover the evil might reach such proportions in the meantime that no remedy will exist. Then Tientsin is doomed and will cease to exist as a port."

While there might be differences of opinion among engineers as to the steps proposed by Mr. Vanderveen, we briefly mention them solely to show that he at all events consistently urged the Government to take some steps with a view to averting a disaster than it now has to confront.

Now that Tientsin has been menaced the engineers will combine no doubt to find a solution, and in course of time they will submit recommendations to the Government which will embody the results of their investigations and experiences. In this way only can the rivers be dealt with, and we hope very soon to be able to publish the sense of their recommendations, and also to report action on an adequate scale by the Central Government.

SIEMS-CAREY RAILWAY AND CANAL COMPANY

The most enthusiastic reception ever given by Americans to a foreign contract in China was when the official announcement was made of the signature of the Agreement between the Chinese Government and the Siems and Carey partnership on May 17, 1917. This contract called for the building of 2,600 miles of railway in the Republic, and its terms were undoubtedly the most attractive ever offered to outside investors by the Chinese Government. Now, however, Americans are beginning to view with alarm the reports circulated throughout China to the effect that the Siems-Carey Railway and Canal Company are finding it difficult to proceed with their work; reports to which credence is unfortunately given by the resignation of Mr. Roy S. Anderson and Mr. Geo. A. Kyle, the former as an officer of the Siems-Carey Railway and Canal Company, and the latter as Chief Engineer of the Chuchow-Chinchow Railway and the Chou-Hsiang Railway. It was through Mr. Anderson that Siems and Carey were able to negotiate the original Agreement, and, as is generally known, he at all times rendered the American International Corporation and its allied companies in China most valuable services. Mr. Kyle has proved himself a most competent and popular occupant of his office as Chief Engineer, and it is with regret the Chinese Government views his resignation.

There are certainly difficulties in the way of the American International Corporation in its work in China, but they can be overcome, and we sincerely hope that the organization will lose no time in using its very best endeavors to clear up the present muddle if only to free other American investors desirous of doing business in China from suspicion on the part of the Chinese as to their real intentions. American interests are undoubtedly suffering very much from the continual failure on the part of American business men to carry out contracts entered into by them, and curiously enough the Chinese Government is nearly always blamed for the failures that have marked the the winding up of many American enterprises in the past. It is, however, hardly fair to place all of the blame upon the Chinese authorities, since other than Americans have in numerous cases successfully negotiated and carried out important contracts in similar conditions.

The American International Corporation came into China with quite a generous amount of advertising in the press of China and America, and because of this fact any failure upon their part to consummate their contracts will tend to greater publicity of their failure. We regret to hear that the consensus of opinion is that the Corporation has unfortunately made the mistake committed by so many of its predecessors in engaging services of men inexperienced in foreign business to head their work in China. The Chinese Government is most desirous of forming business partnerships with American interests in the development of China, and it is to be hoped that large American financial concerns like the American International Corporation will thoroughly probe to the root of American failures in order that the prestige of American business men will not be further endangered.

THE KIRIN-CHANGCHUN RAILWAY LOAN

On October 12 the Minister of Communications at Peking (Mr. Tsao Ju-lin) signed an agreement with the Yokohama Specie Bank for a loan of Yen 6,500,000, with the Kirin-Changchun Railway as security. Of the total amount of the loan Yen 2,150,000 have already been paid to the Chinese Government.

The interest is 5 per cent per annum, and the Government is to receive 91½ per cent as net proceeds. The term of the loan is for 30 years, the security being the property and revenue of the Kirin-Changchun Railway.

During the term of the loan, the South Manchuria Railway Company is to undertake the management of the line and will receive two per cent of the net profits as expenses.

The Chinese Government is to appoint a director to supervise the affairs of the railway, while the South Manchuria Railway Company is to appoint chiefs for the engineering, transportation, and accounts departments.

Conferences are to be held to adjust transportation facilities at Changchun between the South Manchuria and Kirin railways.

This loan is the development of the arrangements made with China by Japan to take over the Kirin-Changchun Railway on a loan basis, and henceforth its management will be conducted by South Manchuria Railway Company as part of the Manchuria railway system.

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

Chinese Eastern Railway.—According to Japanese press dispatches the Russian vice-Minister of Communications passed through Harbin for Dairen on October 21 for an unknown mission, but it is believed. the dispatches say, he is going to meet Mr. E. Hioki at Dairen for the discussion of railway affairs and perhaps to complete the unfinished agreement between Russia and Japan concerning the transfer of a certain portion of the Chinese Eastern Railway to Japan. The section which Japan will purchase is that between Kuanchengtse, near Changchun in Manchuria, and the Sungari River, and the monetary consideration which this deal involves, while not officially stated, is understood to be Y.30,000,000, about four times the amount which was estimated by Japan when this country first began to negotiate for the railway. This transfer of a section of the railway from Russia to Japan was a sort of supplementary agreement to the Russo-Japanese Convention which was signed on July 3, 1916, in Petrograd. The section of the Chinese Eastern Railway from Kuanchengtse and the Sungari River, and the rights of navigation on the river were considered as two conditions to the convention, but the Okuma Ministry fell without giving finality to the question. The Terauchi Ministry succeeding, the question was eagerly studied and negotiations pushed vigorously, it is understood. But owing to the Russian Revolution and the overthrow of the old *Régime*, negotiations were delayed. In the meantime, the Terauchi Ministry created the Advisory Board on Foreign Affairs and executed the plan for the unification of the administration of Korea and Manchuria. It is now declared that a meeting point was recently discovered between the two governments. The question of the rights of navigation on the Sungari River has been deferred, reports the Nippon Dempo News Agency, which says the two countries decided to pay full attention to the transfer of the railway. The price to be paid, the Nippon Dempo understands, will be about Y.30,000,000.

Ssupingkai-Chengchiatun Railway Prospects.—A traveler returning from Mongolia says that the construction of the Ssupingkai-Chengchiatun Railway would have been completed by November as anticipated had not floods inundating the region put back the work. There is no doubt, however, that Chengchiatun will greatly enhance its importance as a distributing center when the railway comes into existence. It is said that in four districts of Taonan, Kaitung, Chingan and Kwangan, about 1,000,000 bushels of kaoliang, 150,000 bushels of beans, 500,000 bushels of Italian millet, 250,000 bushels of millet, 100,000 bushels of wheat, 10,000 bushels of oats, 250,000 bushels of Indian corn, and 250,000 bushels of sorghum are produced annually, without mentioning buckwheat hemp, animal skins, wool, fish, herbs, etc. At present, not more than 250,000 bushels of agricultural products are shipped to Chengchiatun from Taonan every year, but the railway will bring these two distributing centers much closer.

The existence of the line also will improve trade relations with Kailuhsien. The amount of farming products raised annually in the district are said to be 500,000 bushels of kaoliang, 350,000 bushels of beans, 15,000 bushels of millet, 15,000 bushels of wheat, 20,000 bushels of oats, and 5,000 bushels of Indian corn. In short, the trade flowing to and from Chichihar and Harbin, or Hsiaokulun or Changchun or Kungzuling will all be attracted to Chengchiatun when the railway is completed.

Plans Scenic Railway Round Fuji.—Governor Yamawaki of the Yamanashi Prefecture, north of the mountain, wants a railway built around Mt. Fuji, and as his motion was warmly seconded by prominent natives of that prefecture, it has been decided that the suggestion of the governor be at once acted upon and a definite program be drafted.

According to Mr. Ryohei Horiuchi, one of the members of the committee on organization, a brief outline of the plan of improvement for Mt. Fuji is that about seven million tsubo of property owned by the prefecture of Yamanashi are to be let, so that several thousand villas may be built theron to constitute communities of country residences. The most beautiful scenic points at the foot of the mountain are to be selected, as for instance Kawaguchi, Nishi, Shojin, and Honsu. Everything is to be done to make ideal cities. In case residents of these new scenic cities should increase enormously, an automobile service is to established to be run on a road about fifty feet wide.

In order to accommodate general visitors, an electric railway system would be established to run cars between Otsuki and Yoshida and between Yoshida and Honsu so that views of the eight lakes behind Mt. Fuji might be comfortably enjoyed from the cars. The capital of the electric railway enterprise is already tentatively fixed at Y.3,000,000 Only the shareholders of the Electric Railway Company are to be entitled to locate their villas in the scenic utopia.

Japanese Railways Increase Capital.—The Nankai Railway (Osaka-Wakayama Railway) will increase its capital from Y.13,600,000 to Y.19,000,000.

The Kyushu Electric Railway Company will increase its capital from Y.9,900,000 to Y.16,000,000.

Japanese Railways Nationalized.—It is reported that the Yokohama Railway and the Awa Light Railway will be bought by the government for Y.3,870,000 and Y.830,000 respectively. The purchase of the railways was approved in the last session of the Diet.

Tramway Sells Rails at Big Profit.—At an extraordinary general meeting of the Gotemba Tramway Company, which runs from Gotemba station, on the Tokaido line to Yamanashi via Subashiri, the most popular entrance to Mt. Fuji, it was unanimously decided to suspend all parts of the company's service, except inside the town of Gotemba. The company plans to sell the rails and ties from outside the town, and to Kagosaka pass, a distance of 13 miles, as the maintenance cost on this run is very high at present. It is reported that when the company sells the track, it can pay to the shareholders a special dividend of about 500 per cent in the present term.

The American Railway Commission.—The Harbin correspondent of the Peking and Tientsin *Times* wrote under date of Oct. 13: At the station of Harbin are to be seen two private state cars. On inquiring the reason of their always being there, we found that they had been supplied by the Russian Government for the use of the American Commission, traveling to Petrograd and back. There are eight Americans, who have been commissioned by the U. S. Government to make arrangements with regard to the taking over of the Russian railways by America. Among them is Mr Stevens, the president of the Pennsylvanian Railways; the others are all very clever engineers. Each one of these Americans has the appearance of being a very intelligent man, and I have heard several opinions expressed by those who have had conversations with them that better men could not have been chosen to fulfill the mission America has given them. Four of these gentlemen have returned to Petrograd again, as they received word that Russia had decided to agree to the arrangements made with America with regard to the railways. It is not yet decided what is to be done about the Chinese Eastern Railway, although it is rumored that railway is to be taken over by America in January, 1918. Many people are hoping that those arrangements will be made —even the Russians themselves, for the way the trains are being run at present is disgraceful. The Express from Petrograd is very seldom on time; one wouldn't mind waiting half an hour or so, but when it comes in 24, and even 36 hours late, and there is no bed to be obtained in any hotel, it makes one disgusted.

Shanghai Tramways Receipts.—The following is the Traffic Return of the Shanghai Tramways (Foreign Settlement) for the month of September, 1917, and for 9 months ending September 30, 1917, with figures for the corresponding periods last year:

	September, 1917	September, 1916
Gross Receipts ...	$139,030.79	$135,873.16
Loss by currency depreciation	29,304.58	35,821.28
Effective Recepts Mex.	$109,726.21	$100,051.88
Percentage of loss by currency depreciation	22.24	27.90
Car Miles Run ...	327,392	328,464
Passengers carried	6,410,110	6,206,829

	9 Months ended 30th September, 1917	9 Months ended 30th September, 1916
Gross Receipts ...	$1,187,793.45	$1,120,920.89
Loss by currency depreciation ...	262,707.59	295,548.88
Effective Receipts M.	$925,085.86	$825.372.01
Percentage of loss by currency depreciation	23.41	27.98
Car Miles Run ...	3,023,508	2,771,385
Passengers carried	54,028,195	50,059,826

	10 Months ended 31st. October, 1917.	10 Months ended 31st. October, 1916.
Gross Receipts ...	$1,336,645.00	$1.262,343.61
Loss by currency depreciation ...	295,060.43	330,349.39
Effective Receipts	$1,041,584.57	$931,994.22

上海英界仁記路第五號

THE FAR EASTERN REVIEW

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CARING FOR REFUGEES IN NORTH CHINA FLOODS

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SOME DANGERS OF RAILWAY DEVELOPMENT IN CHINA

JAPAN AND THE UNITED STATES AND CHINA

THE SHUIKOSHAN ZINC AND LEAD MINE

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RAILWAY, COMMERCIAL, AND INDUSTRIAL NEWS NOTES

VISCOUNT K. ISHII

HEAD OF RECENT JAPANESE MISSION TO THE UNITED STATES

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Some Dangers of Railway Development in China and How to Prepare Against Them

[By Dr. C. C. Wang, Managing Director of the Peking-Hankow Railway]

As a conclusion to a series of articles on China's railways published in the "Chinese Social and Political Science Review" Dr. C. C. Wang, who can be considered one of the first authorities on the subject, suggests that the Government should proceed to take the following seven steps in order to avoid the pending dangers:

1. To separate railways from politics.
2. To abolish likin along the railways.
3. Consolidation.
4. To complete the unfinished lines and to plan further construction in conformity with our financial ability.
5. To administer the railways as a business enterprise.
6. To encourage honesty.
7. To train up experts.

To Separate Railways from Politics

First of all, the administration of railways should be entirely separated from politics. Experience in other nations has invariably shown that unless the administration of railways is properly safeguarded from the influence of politics, railways will increase the corruption in politics and politics in turn will corrupt the railways. Politicians are the worst kind of men any nation can place in charge of the administration of railways. Railway posts may be marketed as political prizes, and railway rates and fares may be bartered for political selfishness. Political parties may exploit railways and railway finance for party ends. Unless and until we have properly safeguauded our railways from the evil influences of both politics and politicians, our railway administration will surely degenerate from bad to worse. Even such small positions as ticket clerks and porters may be bartered for political or partisan favors. Efficiency and discipline will disappear. Disorganization and corruption will grow. It may be added that in countries where republication institutions are encouraged, the administration of railways is more liable to suffer from the evil influences of politics than in more autocratically governed states.

To Abolish Likin along the Railways

Since likin only taxes the trader, one may question why we should advocate its abolition in connection with railway finance. The reason is that likin barriers bother the trader directly and hinder the railway indirectly. Railways, we may say once for all, depend upon the trader. What hurts the trader immediately, hurts the railroad eventually. Therefore, in order to insure the prosperity of the railroad, one must endeavor to remove the difficulties which lie in the way of the trader. Generally speaking, there is hardly any other institution that is retarding the development of railway traffic more seriously than the imposition of likin along the railways. The difficulty does not lie so much in the amount which is collected, as it does in the delay and damages, the cost of paying the taxes, and other inconveniences which arise from these collections. Indeed, what costs the trader in paying his taxes are often more than the taxes themselves. The reported corruption, extortion, and purposely committed damage to goods by the likin collectors upon helpless traders are too notorious to need emphasis. When these facts are taken into account, it is really a credit to our traders that they can still survive.

But without going further into the question, we feel it safe to say that the abolition of such barriers will not only meet with the hearty welcome of the honest trader, but will as well prove a boon to the commerce of the whole country. And it is by the development of our commerce that our railways may earn more money, thus preparing to meet the approaching financial difficulties, which we have just pointed out. What is lost by the abolition of likin will be more than made up by the increase of railway revenue. To make up the loss of funds of the Ministry of Finances resulting from this abolition, the Government can easily require the railways to credit that Ministry with a lump sum every year equal to the likin revenue derived from railway traffic, which the railways are likely willing to do. By so doing, the Government will have everything to gain and nothing to lose. So it is safe to say that this is one of the very few reforms which will bring benefit to all and harm to none. The only people that will suffer from this reform will be the likin runners, and it is very likely that they will raise every opposition.

The competition between our commerce and industry and those of other countries also demands the removal of the likin obstacles along the railways. In this regard we have to remark that not only the customs tariffs but also all state railways, and to a certain extent even private railways in other countries, invariably make special efforts to help domestic industry. Germany, Belgium, Switzerland, France, Japan, etc., are some of the most obvious instances where customs and railway tariffs are well known to have been used to protect home industry, and their results are justifying their practice. But we have been following a diametrically different policy. *Instead of helping our home commerce and industry by showing them favors, we obstruct them in their uphill struggle against foreign competition and place them at a great disadvantage by subjecting them to the numerous inland impositions while exempting the foreign competitors.* For it is only imported goods that can be transshipped to any open port in the country upon paying a nominal *ad valorem* duty at the port of entry, while there is no way open to the home trader by which he may avail himself of similar immunities. This is not only harmful, but unjust and absurd; and it alone is enough to prevent our trade and industry from catching up with those of our competitors, to say nothing of the numerous other serious disadvantages which our industry has to face in its uphill struggle. In so far as we are tied up from raising or adjusting our absurd customs tariffs we have no other way to help our home industry than to place them on a fair basis with foreign competition by removing the obstacles resulting from inland taxes. [A commission will shortly sit to revise the customs tariff.—Ed. F. E. R.]

We owe this reform not only to the railways, but to our industries as well. The sooner this is done the better it will be. Some efforts have been made to effect some reform along this line in certain cases, but we feel it our duty to appeal to the Government to make this reform general and applicable to all cases; for the removal of likin barriers along railways will benefit the trader and increase railway revenue, both of which facts will prove advantageous to the nation.

Consolidation

The consolidation of railways has been found most efficacious, both in reducing expenses and in increasing efficiency. Practically speaking, the railway history of all countries agree in one respect; namely, in the beginning, the lines are always short, which have to undergo a period of consolidation or unification in order to become great transportation systems like those of America, England, France, and India, or a unified

system like that of Prussia. In England there were several hundred railway companies at the beginning, and the railways of each company averaged only about fifteen miles in length. But twenty-five years later, when the railway length of the country increased from five thousand to thirteen thousand miles, the number of the companies, on the contrary, decreased to twelve by consolidation; and these twelve large companies are continuing to amalgamate, especially in respect to traffic matters. In France, the number of independent systems was reduced from thirty-three in 1847 to eleven in 1852, and still further reduced to six in 1859. The railways in the United States give a still more vivid illustration of this fact. In spite of private ownership and Government interference, consolidation is very extensive. Thus most of the 250,000 odd miles of line in the country are controlled by some ten or twelve large trusts or operating companies. Most of the large campanies operate more than 4,000 miles of line, and some of them have twice that much. If we consider the length of track, these figures will have to be doubted. Every one of the large American trunk lines is made up of scores of former separate lines. In other words, all our Government railways put together are barely enough to equal that of one company in America.

In the countries where there is state ownership, invariably all the state railways are consolidated as a unified whole, and placed under one central administration, with as few district administrations as efficiency of operation permits. Prussia has some 56,000 kilometers of state line, which are operated by twenty-one district directions, thus averaging about 2,700 kilometers for each district direction. Moreover, the business of one mile in Prussia is more than that of five miles in China. Furthermore, in the control of rolling stock and other matters which concern all the railways, there is only one central office which does the work for the whole country. In fact all cars and wagons of the whole country are considered as the common property of all the railways. They are placed under one central controller, with a number of district controllers, who distribute the rolling stock among the different lines, or divisions, according to their needs. The highest degree of economy in using and in handling the wagons is obtained.

Centralization of Swiss Railways

Turning to Switzerland, where nationalization dominates, the same thing obtains. The railways are managed by five divisional administrations, with a central administration at Berne as the headquarters. The control of rolling stock and other affairs of a general nature, which concern all the divisional administrations, are placed in a central office.

Economic and national reasons make consolidation inevitable. From the point of view of economy, the advantages to the public in speed, accuracy, and good organization have been obvious everywhere. Take the matter of rolling stock, for instance, by consolidation it can be used to much greater advantage, and millions upon millions of dollars can be saved every year. The pooling of rolling stock in America and in some of the European countries like Germany, Switzerland, etc, are proving of unmistakable advantage. By this process, it is understood that the whole system of railways can get along with about three fifths of the former quantity of rolling stock in doing an equal amount of work,—which means the saving of millions of dollars.

By consolidation, the administrative and other general expenses can be reduced. It is obvious that it will cost less to maintain one head office and one set of general officers than to maintain a number of them. Moreover to transship frequently always involves extra trouble and expense. Even with interchange of rolling stock, there is still that trouble and cost of duplicate or multifarious accounting and checking which are indispensable when there are separate administrations.

By consolidation some companies were able to reduce their working expenses to about three fifths of their former amount. In fact, it is generally acknowledged that it is largely by such consolidations that the American and British railways have been able to pay so well as they have during the last two decades. Indeed, it should require no special training to see the advantage and necessity of such consolidation. If one turns to our own railways, we find most of the so-called big lines have only about 600 miles of single track, while many of the other lines are not even long enough to form a separate operating section or district in other countries; and for each of these short lines we have to maintain a separate head office with all its directors, managers, and sometimes parasity, etc. This is one of the chief reasons why, in America, the general expenses of the big companies amount only to about 4% of the total operating expenses, while those of our railways average about 10%. The direct losses due to the payment of salaries and expenses are small when compared with the losses due to the lack of efficiency in management and waste in operation. Without going into any detail, it is safe to say that the number of our railway head offices could be reduced to half its number for economic purposes. Of course there are the difficulties resulting from the loan agreements, which make such a consolidation hard. But such difficulties should not prevent us from aiming at the right direction; and every little achieved is so much gained. Therefore, I wish to repeat that consolidation of administration is most important.

To Push the Lines under Construction with Speed and to Adopt a Program for the Future

We believe in pushing the unfinished lines rapidly, because every delay, no matter what is the cause, means so much waste of money. The engineers, etc., will have to be paid, the staff and establishment will have to be maintained, whether or not construction is proceeding. Besides other losses, we have also to make up for the loss of interest on the proceeds from the sale of our bonds. On every dollar of bond we sell we have to begin at once to pay at least 5% interest, but such proceeds, when put in the foreign banks pending the time to be spent in construction, only brings to us a return as current deposit of about 2 or 3%, thus we lose two or three per cent outright. Take the Hukuang lines as an example; we are losing every day some $4,000, for the delay. If the construction is delayed one year, it means that we would lose about $1,500,000; if delayed ten years, $15,000,000 will disappear.

In this connection, we may add that we should not begin the engagement of any directors, engineers, etc., until our bonds are sold. Otherwise, we shall have to support these employees and their establishments with money out of the "advances" made by the loan agents, even doing nothing pending the flotation of the loan. In some cases, we may lose hundreds of thousands of dollars by waiting, and find ourselves in a very embarrassing position, when the "advances" promised by the banks are exhausted, and the European market is too dull to permit the flotation of our bonds. Under such circumstances, we will find ourselves at a great disadvantage with the loan syndicates in our negotiations.

For the foregoing and other reasons, we urge that a general survey of the important trunk lines be first made by experienced engineers, and a careful program for the concessioning and construction of future railways be worked out, so as to separate the nonproductive periods of the various lines and to push the more remunerative lines first, in conformity with our financial capability. Unless such a careful program is followed and proper preparations made for meeting our increased obligations and multiplying expenditures, all our present buoyant hopes of direct gains and indirect benefits will prove a dangerous illusion, the fear of an international commission will become a reality, and this otherwise beneficial railway expansion will become the cause of our dissolution. This is our situation, and to meet it constitutes our task.

To Administer the Railways as a Business Enterprise

To avoid the disaster of any approaching railway collapse, administration of the railways according to business principles is essential. Other railway nations not only have been taught by experience to treat railways as a commercial enterprise and to separate railway finance from other finances, but many have also seen fit to set aside a part of the Government's revenue

from ordinary sources as capital and reserve for the construction, safeguard, and upkeep of their railways. As direct earnings from railways are often insufficient to meet their expenses and interest charges, this precaution has proved not only advantageous but in many cases necessary.

Railways Should Pool Interests

Now railways are not native products of China, but an imported institution. The experience of other nations must obtain in our case. Consequently, in introducing railways, we may well adopt similar safeguards which have been found necessary elsewhere, by setting aside a certain adequate part of the government revenue to meet railway deficits. In so far as all such revenue of the Government is earmarked, and hence cannot be in reality set aside to meet railway demands, the only thing left is to let the railways take care of themselves by permitting them to pool their interests, so to speak, so that what one line loses may be made up by the gains of another and *vice versa*; and part of the surplus of good years may be reserved for the deficit of the bad years. Thus the railways may effect a sort of mutual insurance against each other's losses and non-productive periods, as we have illustrated in the case of the family. Failing to face this necessity by continuing to take the last cent away from the lines that pay and neglect the needs of those that do not, or to take away all the profits of the good years and ignore the losses of the bad years, this would be a suicidal policy.

Many lines operated by private companies have been "milked," to use the exact word, for temporary purposes, at the expense of the prosperity of the lines. The same thing may be done with governmental lines at the expense of the nation. By this process of milking, railway "profit" may be swelled up for a number of years by misappropriating railway capital. For instance, the Government or shareholders may reduce operating expenses to a minimum, and regard all that is left as profit, which they immediately take away from the railway. So far as railway business is concerned, the maintenance and other expenses may be reduced far beyond what is proper during a number of years, without much serious appearance. Necessary improvements may also be neglected. In the meantime, capital investment may be taken away as profit, as we have illustrated elsewhere in the case of locomotives, rails, rolling stock, etc. Such practices are most dangerous.

To avoid this disaster, it is urged that railway finance should be planned out for a long period and properly balanced, so that railway earnings can be devoted first to meet both present and future railway demands. Provisions should also be made to meet all deficits.

Distasteful but Urgent Reform

This may, indeed, be a very distasteful reform to make at this point when the nation's finances are in such a stringent state. But it is indispensable if we want to safeguard the future and to bring about efficiency in railway administration. Like a surgical operation, it hurts while taking place, but without it, it is more dangerous. A few months ago, when the country was disturbed by a revolution, we would not advocate this measure for fear that such a suggestion might be taken advantage of by irresponsible parties to embarrass the Government. In fact, this paper was prepared in 1912 and was amplified in September, 1913, when the writer was investigating the administration of the Swiss railways; but on account of the second revolution, the depredations of the bandit White Wolf, etc., it has been kept until now when constructive work must soon begin. As it is time to consolidate, and plans for the long run must be made, this reform is urgent.

By this separation, it is not meant that railway receipts should be hoarded up while the Government goes borrowing, but rather that the needs of the railroads should receive due consideration, and that a "living" allowance be granted, so as to prevent them from bankruptcy, or being handicapped by the lack of equipment for handling their business, while surpluses can be turned over to the Government through proper channels. That is, the Government should recognize more clearly the railways as a separate business and its own position as that of the shareholder. The business should be managed on a business basis and should be permitted to plan as to how to meet its needs and to carry out its improvements with its rescources, while the Government should only take the dividends after such needs are properly met.

What has hurt the railway credit most during recent years, perhaps, is the fact that the central administration has not been placed in a position to survey the whole situation and make due preparations beforehand, as a result of which spasmodic or "frenzied" financing had to be resorted to in the form of short term loans at greatly sacrificing rates of interest or discount. Railway finance is a science. Special attention should be paid to this branch of railway administration, the success of which should begin with the complete discarding of joggling and the adoption of a definite policy with an absolutely pure and honest administration.

It is accepted as a general rule that sound finance must be preceded by clear records and proper accounting, where each item of revenue and expense is properly accounted for. Unless the Government is bold enough to face the situation squarely, to put all financial matters aboveboard, to introduce proper accounting, and to subject every item of revenue and expense to an impartial control and effective audit, not only our railways will run into collapse, but our nation will get into bankruptcy. It is up to the Government to get its most reliable and properly qualified men, and give them enough power to control all revenues and expenses, so that a proper survey of the financial situation may be made, that every dollar will figure in the books, and that every figure will represent true facts. If the officers lower down should be subjected to proper control, the officers higher up must be prepared to honor such control first. This applies not only to railways, but to other branches of administration as well.

To Encourage Honesty

The last but by no means the least important step, which we propose, is to adopt a system that will encourage honesty and improve efficiency of the railway service. And that system is to admit new employees by effective and impartial examination, to insure permanency and to award promotions on the merit of service.

Squeezing and other forms of corruption among railway men have been often reported in China. We are not in a position to say how much truth there is in these reports; but we are certain that in the absence of fire there can hardly be so much smoke. What we propose now is to stop squeezing among railway men; and we believe we can do it.

In order to stop squeezing among railway men, we must, first of all, find out what are the real causes of that evil practice. I may state from the outset that squeezing and corruption in general among our railway men are by no means due to the lack of honesty or business capacity of our people. Indeed, after staying in Europe and America nine years, and having made much special study as to the underlying causes of squeezing at home and elsewhere, I am convinced that our people, on the whole, compare favorably with other peoples, so far as honesty and capacity for business are concerned. What is wrong at the bottom of it all seems to lie partly in our lack of experience with the new order of things, but largely in our lack of a proper system to encourage honesty and efficiency. Given an efficient system and a reasonable amount of time to become adapted in the administration of railways or any other business, our people, I firmly believe, will be just as honest and efficient as any other people in the world, plus a great deal of hope to be better.

Our lack of system to encourage honesty, although often overlooked by ourselves, has been most glaring in the eyes of others. In the first place, after these long years we have not yet evolved any system for the selection of young men into the railway service. We have not yet opened the door of our railway service to all competitors. Consequently the posts in the railways, such as that of clerks, guards, conductors, station masters, inspectors, etc., may often be filled by irregular means, chief among which is "pull." As a result, men of little education

or ability, or even men of doubtful character, have often entered into the service and held responsible positions. With such men to begin with, good results can hardly be expected.

The evils of the "pull" system are too numerous to enumerate. In so far as one can get into the service through the pull, or his "protectors," or his party, he can easily manage to stay in and practice corruption in defiance of his superiors, for he knows that so long as his protectors remain in power, their overshadowing influence will be enough to protect him from punishment for his rascality. Not only is he unfit for the work, but he also rejects discipline. He is perfectly conscious that the tenure of his post depends upon the influence of his protectors. When the latter are in power, he feels safe, no matter what happens; when that power weakens, off he also goes. There were many cases where men had been suddenly appointed to fill important positions and dismissed equally summarily for no other reason than the rise or fall of their relatives or friends. Such men can seldom be expected to render efficient service. Even if the immediate superiors should wish to enforce discipline, they would often be prevented from so doing by the fear of such protectors' revenge, to say nothing of those who would be too ready to make use of such occasions for putting themselves on good terms with such influential men. We cannot blame these immediate superiors, for we have not any definite protection for those who wish to do right at the risk of offending their superiors. It is reported that in the past some station masters absconded with large sums of money without punishment. Should we look into the records of these men, we could be sure that they were "recommended into" the railway service by men higher up.

Favoritism and Its Dangers

In short, this lack of system for the selection of proper men for the railway service encourages the filling of posts by a series of favoritisms. The high officials, political parties, members of Parliament, and other influential men would incline to appoint their protégés as directors, managers, and other important functionairs; these in turn would tend to appoint their relatives and friends to secondary posts, such as assistants, inspectors, station masters, etc., and so on down the list. As a result, it might happen that the important posts of a line may be filled mostly by men of a certain type, or a certain locality, irrespective of their ability and character. It is easy to see the serious disadvantages which are bound to result from such a practice, especially in the matter of inspection, control, and development, to say nothing of the injustice done to the men of other types or localities.* What is worse is that the absence of any adequate system might even lead to the sale of offices or to other forms of corruption.

Another cause of squeeze is the lack of certainty of service. The uncertainty of office in China has almost become proverbial. From the moment one enters the service, he never knows when he will be removed. This is true not only in the case of any one class of offices, but in that of all classes. Moreover, when one is discharged, there is little chance for him to get his case properly heard by any competent and impartial authority.

Take some of the railway directors, for instance; there have been many cases where they were not permitted to stay long enough even to learn their business. How then, could fundamental reforms be expected? This can well be illustrated by the case of the Peking-Mukden Railway, where we find the average term of office of the directors is but a little over ten months. The Tientsin-Pukow Railway has been open but a few years, and it is said that it has had more than a dozen different directors. Under such circumstances no man can expect to make any progress, for reforms in railway management, take time to decide and plan, to say nothing of carrying them not. Without sufficient time, no sane man would venture to make any fundamental improvement; for, in making improvements, what is seen first is usually trouble, opposition, and even disturbance, while good results may not follow until years later. Furthermore, the directors, besides being uncertain about their terms of office, are sometimes equally ill informed as to what are their duties. The division of responsibility and power is often so uncertain that some of them had to devote most of their time and attention to quarrelling and scheming against each other, while others would simply draw their pay and do no work. The degenerating effect of such a state of affairs must be obvious.

Danger of Short Term Officials

Under such circumstances the director, who is the head of the railway and has to deal with foreigners, can never know as much as the foreigners whose posts are permanent. As he knows less than the foreigners, it is but natural that he cannot command the respect of the foreign employees, much less use them properly, to say nothing of other disadvantages. Moreover, when the permanent foreign employees, besides knowing all the details and history of the work, see that the Chinese directors are tossed about by their superiors, they gradually, and sometimes perhaps unwillingly, become insubordinate. A number of able foreign employees had to be discharged on account of some such troubles; but the fault may lie just as much in the way in which the foreign employees were gradually led to become insubordinate as in the employees themselves. Unless this state of affairs is improved no man can expect to produce lasting good results. This is too long a story to tell in this paper, but suffice it to say that *so long as we allow the important offices of railways to be made political rewards to be filled by favoritism or partisanship so long we shall not have any directors and managers that can do the business properly.* What Mr. Dalrymple, the Manager of the Glasgow Tramways, said in regard to the Chicago railways is equally true in our case. Namely, it is hopeless to think of operating the railroads efficiently so long as the officers were appointed for short terms from political motives.

In regard to the other classes of employees, it is a well-known fact that not many young men enter the railway service with the idea of remaining for any length of time. It is the lack of certainty, more than anything else, that prevents the railway employees from looking upon their service as a lifelong career, and it is this attitude of the employees that tends to promote squeezing.

Then there is the lack of any system for the promotion of the men lower down. Here again "pull" often works greater wonders than merit. This fact tends to influence the men to feel that it makes little difference whether they do their work well or not. The fact that they see with their own eyes that some of their comrades sometimes actually get rich quickly with immunity, and that still others who can get quicker promotion through "pull" than through merit,—all these facts must prove demoralizing.

Urges Civil Service

It is these lacks in the system of railway service that lead to most of the evil practices as circulated about. *Given a strict system of examination for selecting duly qualified young men to begin with and a carefully defined career of service together with a properly organized system of rewar s and punishments, the railways will be able to get the best type of young men of the country to flock into their doors.* With such duly qualified men to start with and a regular career laid out, honesty and efficiency will come with time. For it must have been noticed by many observers that the average Chinese capitalizes certainty of service and a sure future more highly than, perhaps, most other peoples. Take a station master for example, if he has to pass a hard competitive examination and several years' service to get his position, he will naturally value his position very highly. To this, when we add the feeling that so long as he discharges his duties honestly and diligently, he is sure of his job, with a pay that enables him to live comfortably, and a reasonable amount of hope for promotion, the average young

* President Hadley of Yale University said that one of the causes of the failure of the Italian railways was due to the fact that each line was officered by men from one locality, which practice tended to limit the power of judgment in the development of business. Hadley Railway Transportation, 1903, p. 222.

men are not going to risk such realities by courting any temporary gains which, at any moment, may not only deprive him of his safe income and position but also bring about criminal punishment. The result of the customs and postal services are examples as to how the average Chinese young men attach more value to certainty than to other gains. It is repeatedly heard that men in those services would prefer a much smaller salary than to go elsewhere for bigger salaries, simply because they know they are safe in the service so long as they do their work well. Similar reports are often heard regarding the attitude of men in other lines of work.

The railway service can be made even more attractive, for it is a more interesting service, which pays well for the amount of knowledge that is required and the amount of work to be done. It indeed can be made into the most attractive service in the country, to which the best talent will flock. With some impartial system of examination to bar out unqualified men and an effective system of service and reward, we can eliminate squeezing from the railway service or at least reduce it to a minimum.

"Squeeze" and Its Results

My emphasis of the importance of stopping squeeze will perhaps meet with criticism from many directions. On several occasions I have heard very enlightened men make slighting remarks of the efforts exerted for stopping squeezing. According to them, the important question is not to waste any energy in stopping squeeze but to devote every effort to the increase of earnings, so that the squeeze will be more than neutralized. It is claimed that so long as a railway gets plenty of traffic and earning through the employees, what is the difference whether or not some small amounts of money is squeezed by the employees. At first there seems to be considerable practical sense in this view; but after several years of observation, I conclude that I must take a totally different view from it. In the first place, what we advocate is not merely passive, but side by side with that measure the active result of increased earnings will take place. Moreover, we claim that a railway cannot get the largest earnings by countenancing squeeze. On the contrary, experience shows that best results can only be obtained through honest service. Human nature is such that when a man practices corruption, he is bound to devote his best time, best efforts, as well as his best brains, to perfecting his private schemes and to attend to his best legitimate duties afterwards. Hence it is out of the question to get the best results from him, to say nothing of the demoralizing effects which he produces all around.

It may be further pointed out that what the railway suffers is far worse than the amount of money which such men may squeeze. Indeed what is squeezed by the employees constitutes only a small fraction of what the railway loses. Take a passenger for example; if a guard gets one dollar from him, his fare is likely to be three or four times that much. In the case of goods, the proportion will be still greater. What is the harm done to shippers or passengers. It is heard that merchants often find themselves entirely helpless at the hand of station agents. Unless the hands of these agents are properly greased, all sorts of trouble may arise. Cars may not be promptly switched, wagons may be sidetracked, movements may be delayed, goods may be spoiled, pilfered, or even burned on the way. So the merchants are constantly held under awe and threatened to pay squeezes, whereby not only to avoid such calamities but to have his goods shipped at reduced rates and under weights. It is also these underhanded evils that call for the wiping out of squeeze.

To Train Up Experts*

The steps which we have just outlined will not only stop squeezing, important as that is, but will also help to train up experts. It will have the positive effect of improving the whole railway service.

Experience has shown everywhere that railways must be managed by experts. The problems of railway administration are so numerous, the effects so far-reaching, the organization and working so complex, that it is only experts that may be able to develop the railways properly. It may be generally said that one of the greatest needs of the railways in China is expert service. A few facts may help to show the needs.

We all know that in dealing with foreigners, we have lost in many cases in the matter of railways. This perhaps was not due so much to the aggression of our foreign friends as it was to the fact that they were experts while we were not. They knew what they talked about, but we sometimes did not. When our layman representatives, who had no intimate knowledge, met the foreign experts who knew every corner of the question, it might have been expected that our men lost out.

It is due to the same lack of experts in China that we have to employ many foreigners in our railway service at a great cost. The fact that we have had considerable trouble in dealing with some of our foreign employees may be traced to the same cause. To ameliorate the situation we must first of all train up our own experts. Otherwise, any attempt to relieve our foreign assistants will be suicidal. In fact, we need more real foreign experts selected by ourselves for special work, who should be willing to work disinterestedly for the country and ready to afford our young men every opportunity to learn. By this process, in a few years, we shall have our own experts. But the fundamental requirement for training up our own experts under our foreign employees or under any other system is that there must first of all be adopted an impartial and effective system for selecting the young men to begin with, a fair protection against the influence of the politicians and cliques, and a stable and well defined service that will permit the men to work long enough to learn the business.

Great Expectations of Government

In conclusion it may be added that there has been a wrong conception of railway finance in China. Both the Government and the public seem to think that railways are gold mines, built for making enormous profits. What is more dangerous is the feeling or belief that every line, no matter where it is located and how it is constructed or managed, will yield enormous surpluses. They have seen the fabulous earnings of the Peking-Mukden and the Peking-Hankow lines. Therefore, they think all other lines will do likewise. Apparently the Government thinks that the railways are not only going to pay all the expenses and interest on bonds as well as the annual quota on the redemption of the principal of the loans: over and above these —which is clearly beyond the earning power of the railways— large amounts of money are to be taken out from them as net surpluses every year. What is worse is the reported inclination of political parties and high officials to exploit the railways for party or private ends. To say that this is fraught with danger is to put it mildly. It is hoped that the foregoing pages may at least create enough interest in the administration and finances of railways so that the whole railway question may receive due attention before it is too late.

MAY GROW RUBBER IN HAINAN

Through the enterprise of a Chinese merchant, China may become a producer of plantation rubber. At the time of the rubber boom a syndicate owning large rubber properties in the Straits Settlements sent an expert to China to investigate the possibilities in regard to rubber growing. The expert traveled in Kuangtung, Yunnan, and the Yangtze provinces and reported that the climate and soil were unfavorable. Since then nothing more on the subject has been heard, until the other day, when Mr. Liu Yi-shun, an overseas Chinese merchant, made a proposition to the Government. He regards Hainan as good rubber country, and has asked for the right to commence operations there. Apparently he has been granted a free site of some half million acres, and has been urged to invest his money in his mother country. Local officials have been ordered to render him any assistance, and the President has personally encouraged him.

* *Vide* China Needs Experts and How to Get Them, FAR EASTERN REVIEW, Feb., 1915.

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

Ssupingkai-Chengchiatun Railway.—The wooden bridge over the Liao at Sankiangkou on the Ssupingkai-Chengchiatun Railway was completed on November 13 under the superintendence of Mr. Tanabe, the engineer in charge. The work was started last April, and was held to be the only difficult piece of engineering work in the construction of the railway. It has 167 piers and is built of wood excepting a span of steel truss (60 ft. in length) in the center of the bridge, with one of 30 ft. long each on either side. The construction work was seriously hampered by the floods in August three times.

At the opening of traffic over the new bridge a locomotive, bearing Engineer Sato, who was present on behalf of ChiefEngineer Fujine, and a few directly concerned in the construction work, crossed the bridge and returned. Then the locomotive was attached to the passenger cars carrying the chief officials of the Railway and visitors invited to attend the function, numbering abont 150, and crossed the bridge, which is about 2,200 ft. long. The whole line is expected to be thrown open to traffic during December. Public traffic, for both passenger and goods, was opened provisionally over the Ssupingkai-Pamiencheng section on November 1.

The Yokohama Specie Bank underwrote the Ssupingkai-Chengchiatun Railway Loan on the estimate that Y.5,000,000 would be enough for construction. The rise of prices caused an excess of the estimate by about Y.1,500,000.

The proposed railway lines for which Japan has secured the preferential financing claim include the extension of the Ssupingkai-Chengchiatun Line to Taonanfu and then to Jehol, and one from Kaiyuan to Hailungcheng. The rise of prices and silver renders the construction of these proposed lines at present inopportune.

Japanese to Extend Shantung Railway.—An engineer of the Shantung Railway with an assistant started from Tsingtao recently to conduct preliminary surveys for the extension of the railway from Tsinan to Taokowchen. He will also go to Tsechow, Shansi, by the Taokow-Chenghua line running across the Peking-Hankow Line. Then he will come back to Weihui, and will go south to Chengchow, thence to Kaifengfu by the Kaifeng-Hunan Line, and back to Tsinan. He expects to put in about 45 days on the tour

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American Railroad Men in Manchuria.—A dispatch of the Harbinsky Vestnik from Vladivostok says that a detachment of twenty American railroad men has arrived here for work on the Manchurian Usuri Railway, in the northeast corner of Manchuria. Many American engineers have been arriving in Siberia to serve on the Siberian railway. By way of experiment, some of them operated trains at Tomsk with a remarkable result.

Russian engineers thought that, at best, their American comrades would be able to run 24 trains only during the 24 hours. It was therefore with great surprise and admiration that they found the Americans actually running 70 a day without a hitch. Thanks to their skill the goods which had accumulated at Tomsk and neighbouring stations were disposed of in the course of one week.

Sinkiang Motor Truck Scheme.—The Chief of the Bureau of Industrial Development for Sinkiang, in a memorandum submitted to the authorities, points out that though Sinkiang has always been regarded as indigent, and special grants have been made by the Central Government to defray the deficit on the administration, it is in fact rich in resources and capable of being developed into a wealthy province. The main difficulty is lack of transportation, the land journey to Peking of 3,000 miles taking over a hundred days. Mr. Yen is of the opinion that the institution of a motor lorry service on a large part of the caravan route would be both practicable and profitable. He proposes an undertaking of this kind with a capital of $1,000,000, and believes that if it were realized the development of many mines, now unprofitably worked on the old-fashioned native system, would become possible through the importation of modern machinery which cannot be transported by camels. Apparently, petroleum is found in great abundance in its free state, and is procurable without the trouble of boring wells. The inhabitants use it as an illuminant, but of course obtain poor results, as no serious attempts are made to refine the oil. Great quantities run to waste. Cattle breeding is another industry capable of great development. In the northern part of the province there are enormous stretches of vacant territory which in the summer is covered with thick verdure, affording the finest feeding for cattle.

Chosen Railway Plans.—Mr. Y. Kubo, Director of the South Manchuria Railway Co.'s Chosen Railway Office, Seoul, while visiting Dairen, stated that with the prospective opening to traffic of the Seishin-Kwainei Line on the 25th inst., the railway construction program in Chosen will leave the Yeiko-Kanko Line only to be completed in the course of a few years. An extension from Kanko to Yujo on the Seishin-Kwainei Line via Hokusei and Joshin is certain to be built sooner or later, bringing into existence what may be designated as the Trans North Chosen Line.

The construction of this extension will require a comparatively heavy outlay, something like Y.35,000,000, as much engineering difficulty will have to be surmounted in the work between Joshin and Ryojo. The construction program is to extend over ten years till 1927, and an appropriation for the first section between Kanko and Hokusei will be included in the estimates for the next fiscal year, subject to the indorsement of the Imperial Diet. In addition, it will be necessary to connect the Seoul-Fusan and the Seoul-New Wiju trunk lines with important trade centers, but light rail lines will quite answer the purpose.

The agricultural and sericultural industries in south Chosen have made a remarkable development. Rice, fruits, raw silk, etc., are being put on the Japanese markets in a major portion. In the line of marine products also, a wonderful progress is said to have been made. As regards industrial enterprises, Chosen seems not quite so pushing as South Manchuria, but there are many which may be leavened up in the future. It is decidedly stupid to make the development of industries in a colony a millstone to its mother country. Chosen will soon be able to open up north Mauchuria, Siberian, and north China markets for her products. When such contingency is taken into consideration, the recent annexation of the Chosen Lines to South Manchuria Lines and the proposed construction of the Kirin-Kwainei Line will not only bring Manchuria and Chosen into closer contact, but will also serve as a main artery of commerce between Japan, Manchuria, and north China.

South Manchuria Railway Returns.—The South Manchuria Railway traffic returns for September gave a daily average of Y.72,397.16 an increase by Y.21,554.62 over last year, as under: Passenger, Y.707,228.76; Goods, Y.1,218,039.97; Warehouse, Y.41,894.76; Miscellaneous, Y.204,751.31; a total of Y.2,171,914.80.

For October the receipts were: Passenger, Y.705,634.41; Goods, Y.1,554,115.18; Warehouse, Y.30,707.47; Miscellaneous, Y.130,701.17; a total of Y.2,451,158.23; Monthly increase on corresponding period of last year Y.19,603.63.

During the first 10 days in November a decrease was shown in the receipts which were: Passenger, Y.265,249.43; Goods, Y.652,953.34; Warehouse, Y.17,711.91; Miscellaneous, Y.60,888.59; a total of Y.996,803.27; being a decrease from corresponding period of last year of Y.13,902.09. The net increase thus for this year is Y.5,523,887.05.

Railway Congestion in Japan.—Anent railway congestion in Japan amounting to 500,000 tons, according to a semi-official statement recently issued, the total number of freight cars is now 43,800 of which 1,800 cars are always under repair. In the meantime the amount of consignments is increasing at a rapid rate.

Japan Buys Light Railway.—The Government has decided to purchase the Ishinomak Light Railway, which runs from Kogota to Ishinomaki, in Miyagi prefecture. The decision was made in consequence of the recent completion of the Trans-Ou Railway with Kogota as the eastern terminus.

United States Railway Embargo.—Coincident with the news that the United States will operate all railways in the Eastern states comes word that the Canadian-Pacific Railroad Company, the Santa Fe, and the Western Pacific system have announced an embargo on all freights bound for points in the Orient. They declare that such a step is necessary in order to relieve the freight congestion now existing in the United States and state that the embargo will remain in force until the situation has been materially improved.

Japanese Railway Coal Needs.—The Imperial Japanese Railways will buy from 300,000 tons to 500,000 tons of coal during the coming fiscal year in some foreign market partly for the purpose of economizing its fuel cost and partly for the purpose of reducing the prices of coal in the home market. The yearly consumption of the Government railways amounts to roughly 2,000,000 tons.

Kyushu Electric Railway Plan.—The Kyushu Electric Railway Company whose paid-up capital is Y.930,000, out of a total

capital of Y.6,300,000, intends to collect the entire amount, and then inerease the present capital to a total of Y.15,000,000. The shares will be allotted to the shareholders, one to one of the old, and the remaining 48,000 shares will be placed on the market for the subscription of the public.

Federated Malay States Railways.—In his report on the Federated Malay States Railways for 1916, Mr. G. H. Fox, then acting General Manager, writes:

The working of the Federated Malay States Railways during the year 1916 has produced a net profit of $4,027,228.54 compared with $2,636,397.93 in 1915. This result affords a striking commentary upon the general prosperity of the Malay Peninsula.

The net profit for the year is equivalent to a return of 3.94 per cent on the total capital expenditure (including lines not open for traffic), or to 4.35 per cent on capital expenditure on open lines only, compared with 2.97 per cent for 1915, calculated on the latter basis.

The receipts from all sources amounted to $11,616,696.50 compared with $9,051,243.17 for 1915, an increase of $2,565,453.33 or 28.34 per cent. Of this increase, no less than $1,669,581 arises on passenger traffic. The revenue expenditure on all accounts amounted to $7,589,467.96 compared with $6,414,845.24 for 1915, an increase of $1,174,622.72 or 18.30 per cent. The increase in expenditure is attributable almost entirely to the very high cost of stores and materials, particularly coal. In the running of locomotives alone, coal is responsible for additional expenditure of about $090,000.

The total capital expenditure to December 31, 1916, including lines not open for traffic, is $102,211,994.28. The expenditure during the year was $3,202,089,33. Out of this total the amount expended on lines not open for traffic is $2,636,897.84, and on open line account $565,191.49. Two items calling for special comment are the credits of $423,628.11 under the heading of Road Motor Service and $31,508.14 under Steamer and Ferry Service. The first named item represents the reduction of capital account consequent upon the closing down of this branch of the railway activities and the other arises through the sale of the launches *Winifred* and *Thistle* and three tongkangs to the Indian Government for military purposes.

No new mileage of running lines has been opened for traffic during the year. The mileage of lines is shown in statement I A, where it will be noticed that the total mileage of running lines, reduced to single track, is 918 miles 67 chains, and the total of single track, including sidings, is 1,028 miles 17 chains.

The total expenditure in respect of railway working is $6.235,069.16, which is 58.33 per cent of the total traffic receipts—a figure which may be considered satisfactory. The total traffic receipts are $10,688,181.73, to which is added $103,315.22 representing miscellaneous receipts not arising from transport of passengers and goods. Of the former amount, $6,082,913.03, or 56.91 per cent, represents passenger traffic; $459.818.96, or 4.30 per cent, is other traffic by passenger trains; $4,145,449.79, or 38.79 per cent, is goods train traffic.

The total number of passengers carried on the railway in 1916 was 14,741,066 as compared with 11,899,028 in 1915. Of these, 12,229,939, or 82.96 per cent. were third class passengers. There were, in addition, 8,920 season tickets issued. The total goods tonnage carried was 1,267,031 tons compared with 1,100.381 tons in 1915.

The total number of live stock carried in 1916 was 122,427 as compared with 104,822 in 1915.

The receipts on account of docks, etc., including charges on traffic passing over the various wharves owned by the railway, together with earnings on particular terminal services performed there show a profit of $53,098.43. Special expenditure for the year amounted to $42,035.07, of which $40,298.26 was on account of new steel lighters. During the year, 79 ocean steamers called at Port Swettenham with import cargo as against 87 during 1915, and 39 steamers for export cargo, the same number as in 1915. These figures do not include the British India steamers which run regularly between Indian ports and Singapore, calling at Port Swettenham. 28,932 tons of rubber were exported through Port Swettenham during the year against 22,172 tons during 1915 and 15,147 tons in 1914.

Chinese Eastern Railway Traffic.—During October, staple produce sent south to Dairen from the Chinese Eastern Railway was:

Beans, 5,656 tons; bean cake, 492; bean oil, 919; kaoliang, 656; other cereals, 570; a total of 8,993 tons.

The appearance of produce appears rather backward this year. Kaoliang, for instance, used to arrive to the amount of about 10,000 tons in October, while this year the total was only 656 tons, which, even making allowances for the cereal anti-export injunction operating in Kirin province, was exceedingly small.

Manila Railroad Raises Wages.—Over 5,000 of the 6,000 odd employees of the Manila Railroad Company will receive, in the nature of a New Year's gift, a raise of 10 per cent, according to announcement made by Eugene E. Reed, president of the company. These sweeping promotions will, however, not include the staff and those employees allowed accrued leave pay, exception having been made of them in the decision arrived at by the board of directors of the company when the matter came up for consideration.

Shanghai Tramways.—The following is the Traffic Return of the Shanghai Tramways (Foreign Settlement) for the month of November, 1917, and for 11 months ended 30th November 1917, with figures for the corresponding periods last year:—

	November, 1917	November, 1916
Gross Receipts ...	$141,519.35	$138,353.50
Loss by currency depreciation	30,567.60	29,260.76
Effective Receipts Mex.	$110,951.75	$109,092.29
Percentage of loss by currency depreciation	22.84	22.36
Car Miles run ...	324,696	336,274
Passengers carried	6,439,264	6,307,290

	11 Months ended 30th November, 1917	11 Months ended 30th November, 1916
Gross Receipts ...	$1,478,164.35	$1,400,696.66
Loss by currency depreciation ...	325,628.03	359,610.15
Effective Receipts M.	$1,125,536.32	$1,041,086.51
Percentage of loss by currency depreciation	23.30	27.22
Car Miles run ...	3,684,228	3,458,749
Passengers carried	67,298,193	62,875,533

SHIPPING

Japan's Ship Building Facilities.—In Japan at present there are twelve important yards, including the Mitsubishi yards at Nagasaki and Kobe, the Kawasaki Dockyard, the works of the Osaka Iron Works at Osaka and Inoshima, the Uraga Dockyard, the Ishikawajima Shipyard, the Ono Iron Works, the Fujinagata Shipyard, the Harima Shipyard, the Matsuo Iron Works, and the Tochigi Shipyard. These shipyards have 24 docks and 45 stocks where 47,860 workmen and 3,400 experts are employed, the details being as follows:

	Docks	Stocks	Experts	Workmen
Mitsubishi Yard at Nagasaki	3	6	1,020	11,874
Mitsubishi Yard at Kobe	2	2	405	4,930
Kawasaki Dockyard	1	6	942	13,107
Osaka Iron Works	4	5	290	5.355
Osaka Iron Works at Innoshima ...	3	6	88	4,585
Uraga Dockyard ...	2	5	243	2,626
Ishikawajima shipyard	1	2	118	1.353
Ono Iron Works ...	3	4	34	760
Fujinagata Shipyard	2	4	100	1.200
Horima Shipyard...	1	2	55	660
Matsuo Iron Works	2	1	65	1.200
Tochigi Shipyard...	—	2	40	210

Those yards have recently enlarged their staffs and plants, but owing to the reduced supply of raw materials they cannot at present put their full capacity into play. Last year they launched 39 ships with a combined tonnage of 140,294 tons. but then the supply of raw materials was pretty well maintained. As may be judged from the following table this is a large advance over the preceding years:—

Years	Ships launched	Combined tonnage
1910	4	15,817
1911	6	23,935
1912	7	27,183
1913	4	34,478
1914	19	80,959
1915	8	40,485
1916	39	140,294

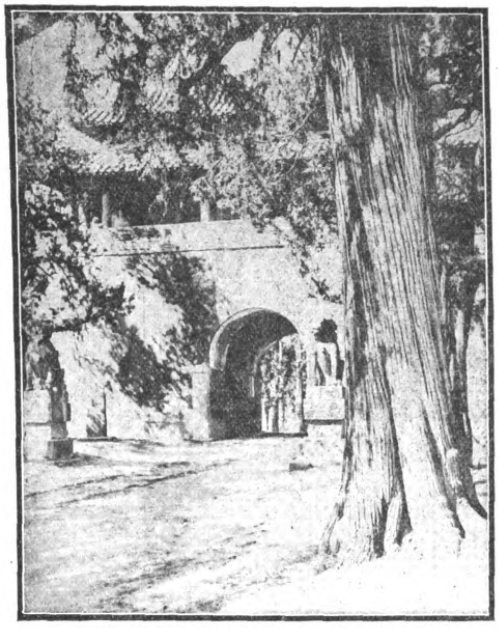
But it is not the full capacity of the shipyards as recently enlarged. This year the different shipyards have laid keels for 29 ships with a combined tonnage of 135,350 tons, but according to an expert it is open to question whether these ships will be launched during the present year, owing to the scarcity of steel supplies. The normal capacity of those shipyards is about 203,025 tons. This is not a large figure as compared with the outputs of the advanced nations in the West as may be seen from the following table:

Countries	Ships built	Tonnage
Great Britain...	340	668,478
United States of America	63	159,264
Germany	—	—
France	6	25,402
Holland and Belgium ...	84	108,608
Italy	5	17,474
Norway	57	61,600
Sweden	24	19,825
Russia	1	161
Japan	8	40,485

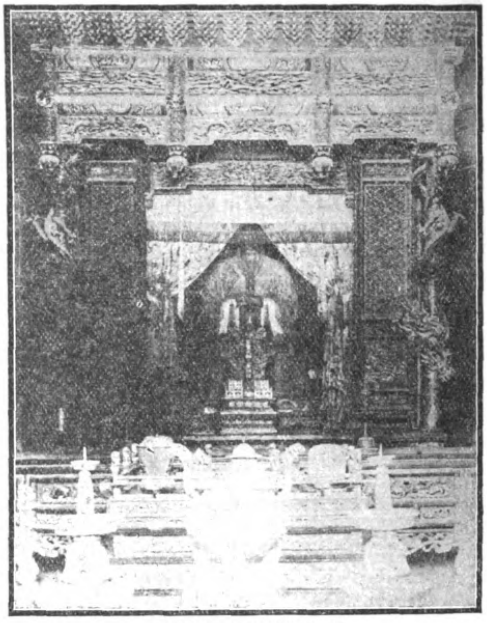
The Japanese shipbuilders are fully protected by the Government under the Shipbuilding Encouragement Law if the ships they build are so made as to conform to the minute provisions in the bye laws to the main law.

"Some sections of the public," said Mr. Tsutsumi again, "argued that the bounties should be withdrawn in view of the recent activity but the present activity is not normal, being only an anomaly created by the war. The argument may also be sound and can be followed if it be put forth immediately after the war began, but it is now too late, as certificates have been granted by the Government for over three years ahead. Foreign builders also point to this as an advantage of the Japanese builders, but that is more than offset by the fact that they have to depend on foreign supplies of materials."

CHINESE GOVERNMENT RAILWAYS
TIENTSIN-PUKOW LINE



SECOND GATE, GRAVE YARD OF CONFUCIUS
CHU-FU, SHANTUNG



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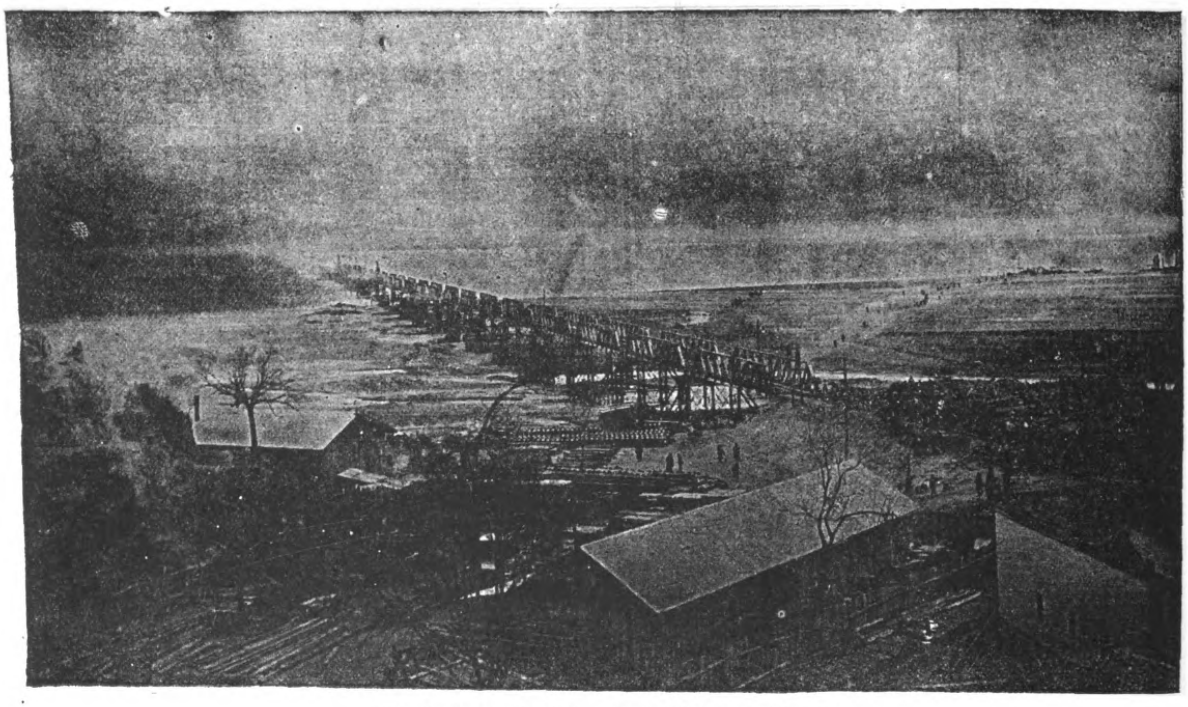
Tientsin, May 1st, 1915. **The Tientsin-Pukow Railway Administration.**



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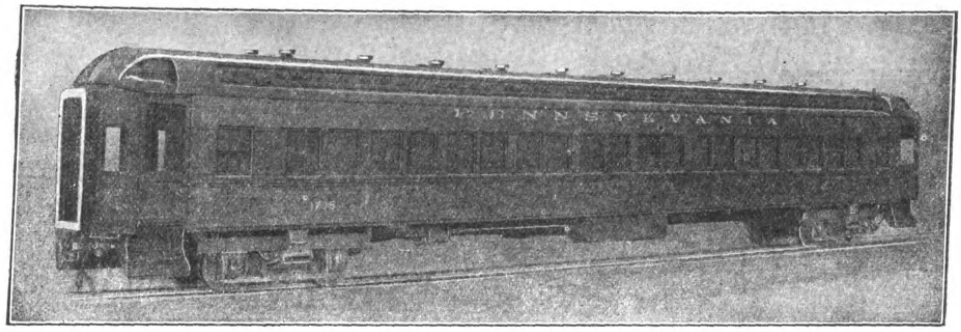

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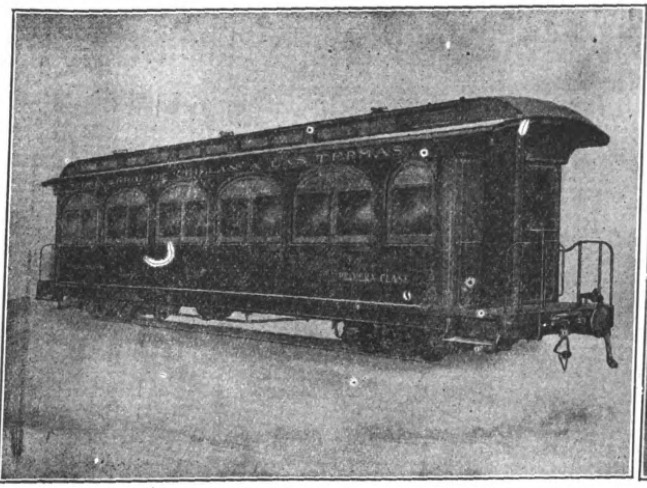

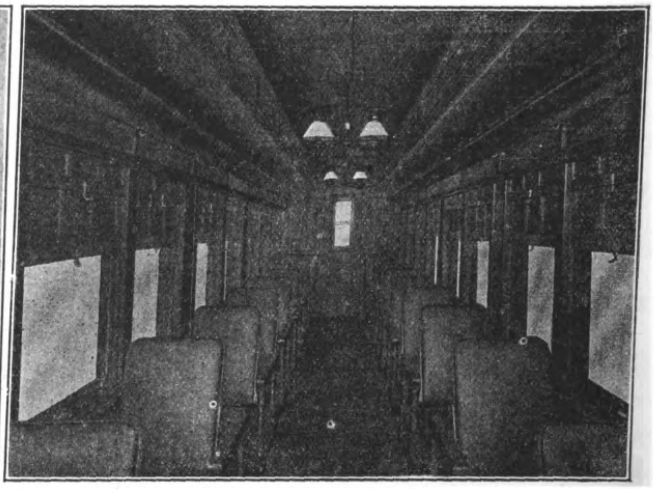

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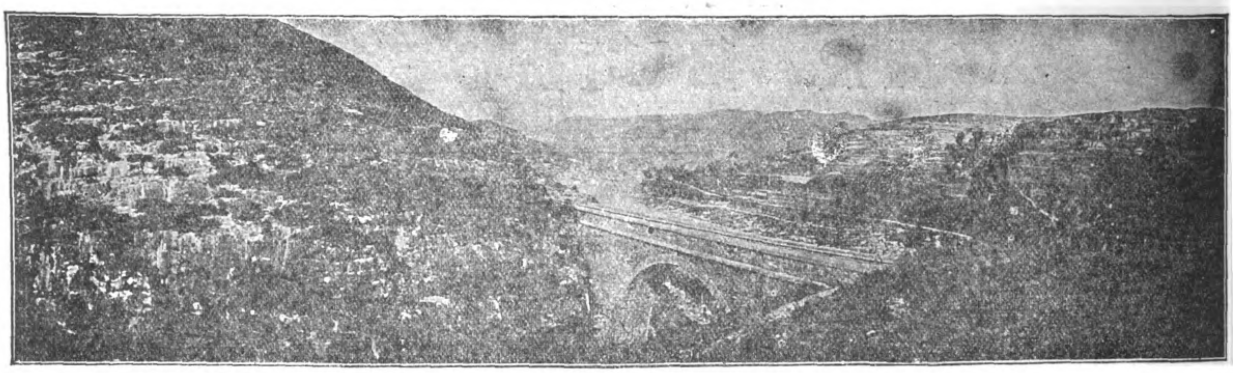
(CHINESE GOVERNMENT SHANSI LINE—CHENGTINGFU TO TAIYUANFU)

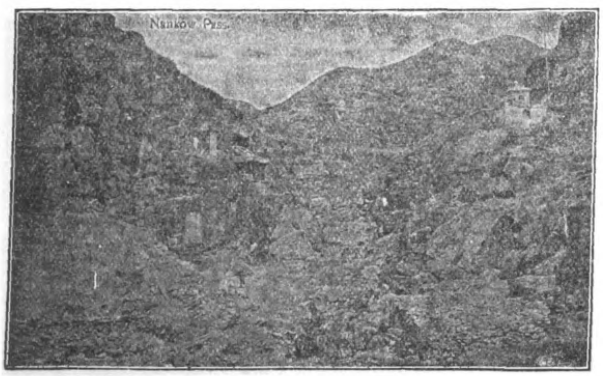


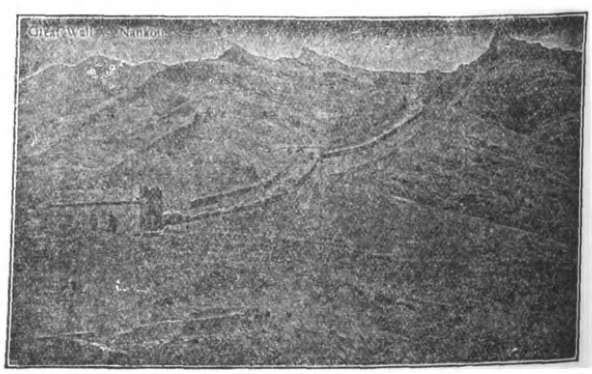
VIEWS ALONG ROUTE OF CHENG-TAI RAILWAY

The trains of this line connect with the through service of the Peking-Hankow Railway, affording Travellers the opportunity of seeing the most picturesque part of China. The line passes through a mountainous section of country, rich in Mineral Resources to the Provincial Capital of Shansi at Taiyuanfu. This interesting city is a great educational center, and famous for the fine quality of its artistic embroideries.

The Peking-Kalgan Line

"THE ROAD TO THE GREAT WALL"





This line follows the ancient caravan route and military highway from Mongolia into China by the way of the historic Nankow Pass. This pass is the Key to Peking, and Kalgan is the gate of the Country. From here the great camel caravans set out on their long journeys across Mongolia to Siberia and Central Asia. This old frontier mart, retaining its time-honored characteristics, one of the most interesting sights of the Old World, is made accessible by the new railway. The line also carries the passenger in two hours from Peking to Nankow, when the Great Wall of China and the Ming Tombs may be seen. A foreign hotel is operated by the railway authorities at Nankow, where chairs and guides may be secured for the Tombs.

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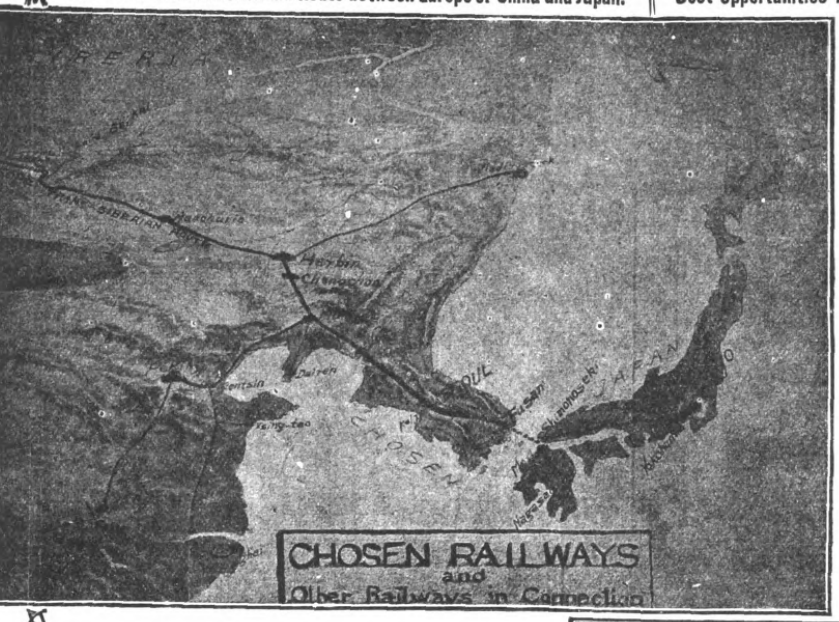

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With express trains on the Japanese Rys.

Through Traffic

Stations open to through traffic are as follows:—

South Manchuria Railway.—
Dairen, Changchun, Mukden, Yingkou, etc.

Chinese Eastern Railway.—
Tsitsihar, Manchuria and Harbin.

Chinese Government Railways.—
Hsinmingfu, Shanhaikuan, Peking, Tientsin, Shanghai, Nanking, Tsinanfu, Hankow, Nankow and Kalgan.

Russian State Railways.—
Irkutsk, Odessa, Warsaw, Moscow and Petrograd.

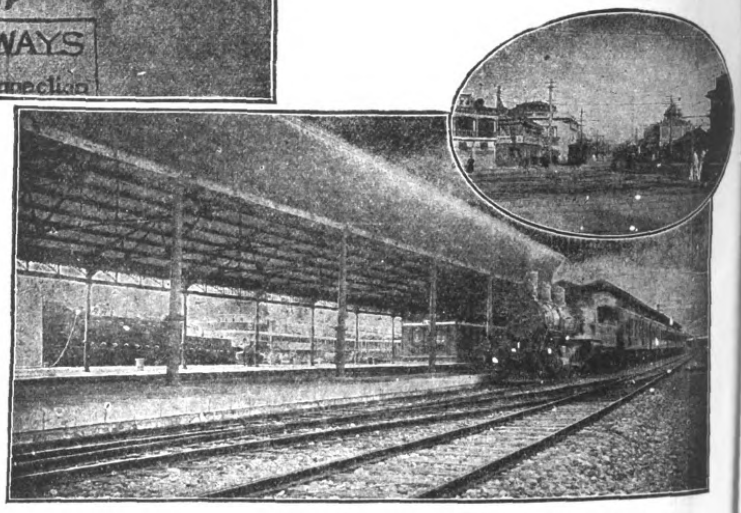
⇐

Chosen Railways.—
Fusan, Keijyo (Seoul) Heijyo, † Jinsen and † Chinnampo.

⇒

Japanese Railways.—
(via Chosen)
Tokyo, Yokohama, † Nagoya, Kyoto, Osaka, Kobe, Shimonoseki, Moji and Nagasaki.

† No through traffic to or from points of the Chinese Eastern Railway and the Russian State Railways.



Fusan Pier — A scene in Keijyo (Seoul)

Ticket Agencies

The International Sleeping Car Company; Messrs. Thos. Cook & Son; The Nordisk Resebureau.

Hotels

Under the Direct Management of the Railway Bureau.

CHOSEN HOTEL AT KEIJYO (Seoul).—Cable Add: "CHOHO" 80 bedrooms mostly with bath; Motor-cars meet guests at the station.

STATION HOTELS AT FUSAN AND SHINGISHU.—The most convenient and comfortable stopping places on the upper floors of the two station buildings.

FOR FURTHER PARTICULARS PLEASE APPLY TO

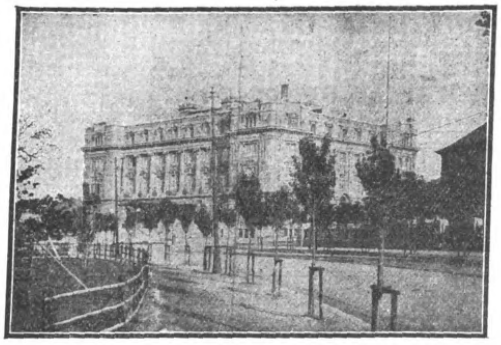
Keijo Office,

South Manchurian Railway Co.,

Tel. Add: "MANTETSU", Keijo. KEIJO, CHOSEN **Code Used: A.B.C., 5th Edition.**

SOUTH MANCHURIA RAILWAY

Important Section in the Overland Route between Europe and the Far East



S.M.R. Co.'s Yamato Hotel, Dairen (The Finest Hotel in the Far East).

Save time and Money.

The Quickest, Cheapest, and Safest Route between Europe and the Far East is via Siberia and Manchuria. The South Manchuria Railway Company's Express Trains are equal to the best in Europe and America, and are timed to connect with other Express Trains and Steamers. Sleeping Cars are attached to most of the Ordinary Daily Trains.

How to Reach Shanghai.

Travellers from Europe via Siberia by the Through Express arrive at Dairen in time to catch the S.M.R. Company's Weekly Mail and Passenger Steamer "Sakaki Maru" of the Dairen-Tsingtao-Shanghai Line. This Steamer is turbine driven, equipped with wireless telegraphy, and carries a doctor on board. The "Kobe Maru," which also leaves Dairen weekly, plys direct to Shanghai without calling at Tsingtao.

Important to Travellers and Tourists.

The S.M.R. Co. has established, under its direct management, a series of Yamato Hotels at Dairen, Hoshigaura, Port Arthur, Mukden, and Changchun. All on European lines. Cook and Son's Coupons accepted. Tel. add.: "Yamato"

Health and Holiday Resorts in Manchuria.

The beautiful climate and scenery of Manchuria is fast popularizing it as a health and holiday resort, and special seaside colonies have been established at Hoshigaura (Star Beach), near Dairen, and Ogondai (Golden Beach), near Port Arthur.

Of Interest to Shippers.

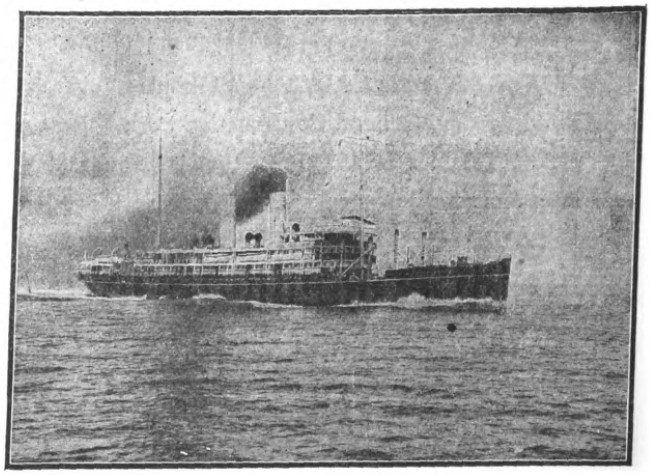
In addition to its Dairen-Tsingtao-Shanghai Liners, the S.M.R. Co. run a fleet of cargo steamers between Dairen and Hongkong, calling at ports en route. Other Steamship Companies have regular services to and from Dairen. Particulars may be obtained from the Manager of the Wharf Office, Dairen.

Best Steaming Coal in the Far East.

Large stocks of the S.M.R. Company's Coal from the famous Fushun Collieries are always kept at Dairen, Port Arthur, Newchwang (Yingkou), and Tientsin Depots, and can also be obtained at Chefoo, Shanghai, Hongkong, Singapore, and Penang. For special contracts apply Manager, Mining Dept., S.M.R. Co., Dairen.

Ticket Agents.

The S.M.R. Company's Railway and Steamer Tickets, Illustrated Guide Books, and Handbooks of Information can be obtained at all the Offices and Agencies of Messrs. Thos. Cook & Son, the International Sleeping Car and Express Trains Co., and the Nordisk Resebureau; the Nippon Yusen Kaisha, Shanghai; the S.M.R. Branch Wharf Office, Shanghai; or direct from the



S.M.R. Co.'s Dairen-Tsingtao-Shanghai Liner, "Sakaki Maru."

South Manchuria Railway Company, Dairen.

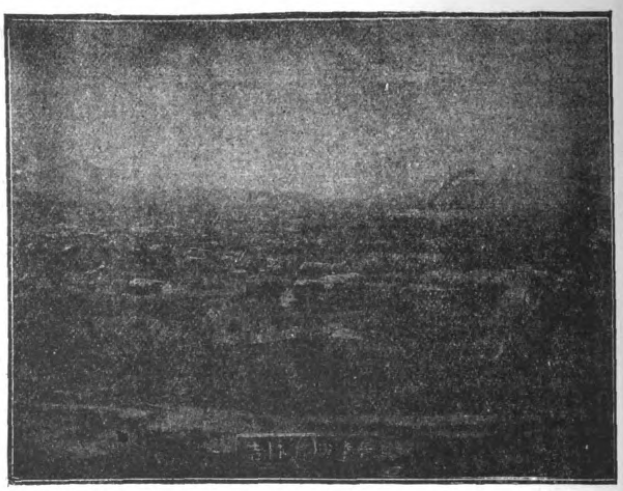
Tel. Add.: MANTETSU. **Codes: A.B.C. 5th Edition, A.L. & Lieber's.**

中華民國政府吉長鐵路行車時刻表

CHINESE GOVERNMENT RAILWAYS KIRIN-CHANGCHUN LINE.

TIME TABLE.

DOWN TRAINS Daily		STATIONS	UP TRAINS Daily	
Mixed	Mail		Mail	Mixed
P.M. 2.30	A.M. 8.30 d.	TOUTAOKOU	P.M. a. 6.00	A.M. 11.10
2.40 2.48	8.40 a. 8.42 d.	2.79 CHANGCHUN	d. 5.50 a. 5.45	11.00 10.56
3.22 3.27	9.12 a. 9.14 d.	12.69 KALUN	d. 5.15 a. 5.13	10.22 10.19
4.00 4.03	9.44 a. 9.45 d.	11.13 YINMAHO	d. 4.43 a. 4.42	9 46 9.40
4.18 4.28	9.58 a. 10.00 d.	5.38 HSIACHIUTAI	d. 4.29 a. 4.27	9.25 9.20
4.41 4.45	10.12 a. 10.13 d.	4.58 YINGCHENGTZE	d. 4.14 a. 4.13	9.07 9.05
5.10 5.19	10.35 a. 10.43 d.	9.14 TUMENLING	d. 3.53 a. 3.48	8.42 8.37
5.38	a. 11.02 d.	2.57 CHAOCHIATIEN	d. 3.30 a.	8.17
6.02 6.06	11.22 a. 11.24 d.	9.26 HUAPICHANG	d. 3.08 a. 3.06	7.51 7.47
6.23 6.24	11.37 a. 11.38 d.	6.46 KUTIENTZE	d. 2.52 a. 2.51	7.30 7.28
6.41 6.44	11 53 a. 11.55 d,	6.83 KIUCHAN	d. 2.37 a. 2.35	7.11 7.07
7.05	12.15 a.	8.30 KIRIN	d. 2.15	6.45



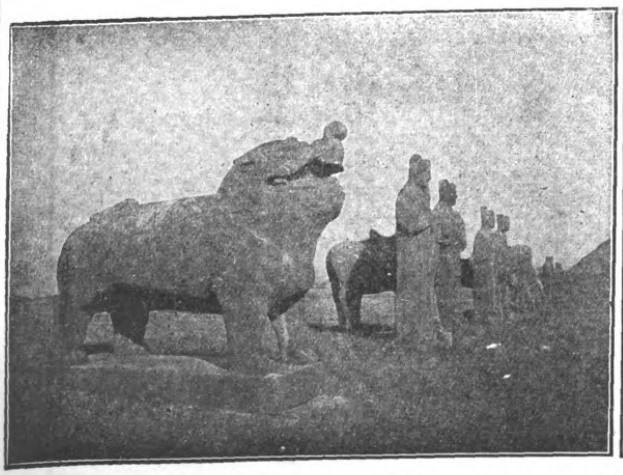
BIRD'S EYE VIEW OF KIRIN CITY

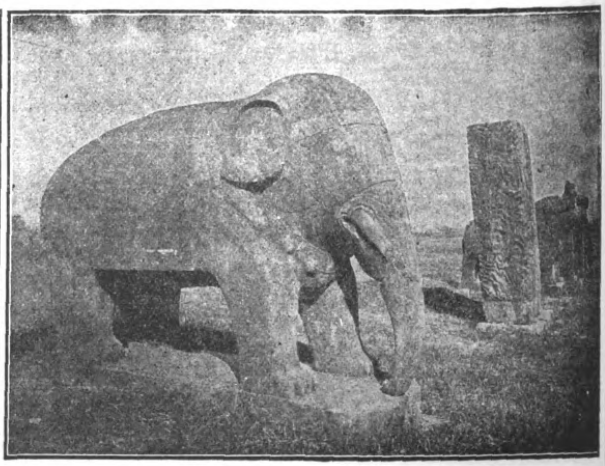
NOTICE:—"d"=Departure. "a"=Arrival.
1st June 1917

THE PIENLO RAILWAY

(KAIFENG-FU TO HONANFU)

"THE FIRST SECTION OF THE PROJECTED CENTRAL TRUNKLINE"





THE SUNG TOMBS NEAR KAIFENG-FU ON THE PIENLO RAILWAY.

The line connects with the through service of the Peking-Hankow Railway at Tcheng Tchéou, enabling the traveller to visit Kaifengfu, the provincial capital of Honan, and the old capital of the Empire at Honanfu.

Certain-teed

Certain-teed is tangible— something you can take hold of

It means certainty of quality and guaranteed satisfaction

Certain-teed Roofing

For Office buildings, factories, hotels, stores, godowns, garages, etc.

LIGHT IN WEIGHT, WEATHERPROOF, CLEAN, SANITARY, AND FIRE RETARDANT

Made in one, two, and three ply thickness

Andersen, Meyer & Co., Ltd., Shanghai — *Agents for China*

Pacific Commercial Co., Manila — *Agents for the Philippines*

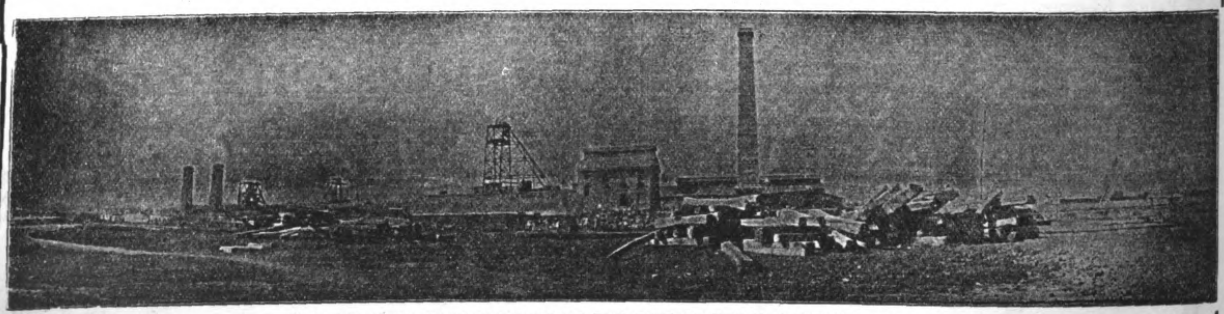
F. W. Horne Company, Tokyo — *Agents for Japan*

CHINESE GOVERNMENT RAILWAYS

THE TAO-CHING RAILWAY

TAOKOU TO CHINGHUA

(CHINESE GOVERNMENT HONAN LINE)

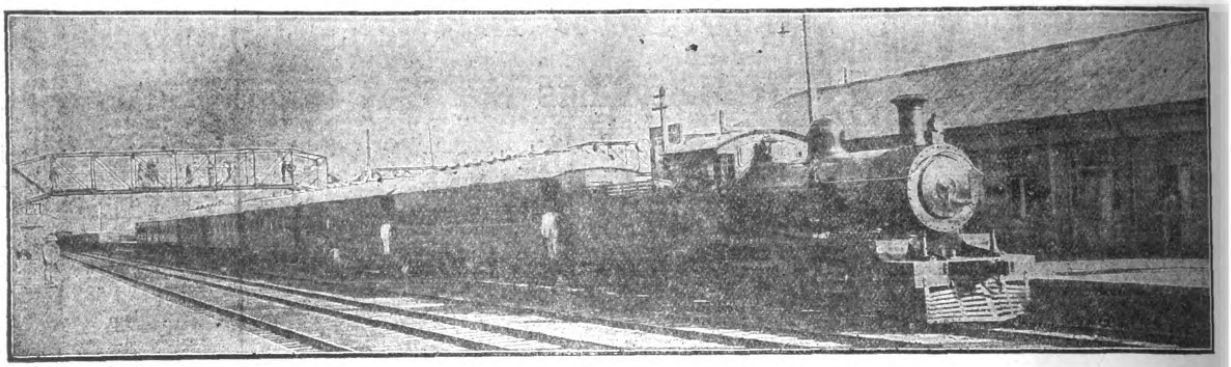


GENERAL VIEW OF COAL MINES ON THE LINE OF THE TAO-CHING RAILWAY

"China's Road of Anthracite"

THE TRAINS OF THIS LINE CONNECT AT SIN-SIANG-SIEN WITH THE THROUGH SERVICE OF THE PEKING-HANKOW RAILWAY. IT TAPS THE GREAT ANTHRACITE COAL DEPOSITS OF SHANSI, AND CONVEYS THE PRODUCTS OF THE MINES TO THE NEAREST NAVIGABLE RIVER.

Chinese Government Railways



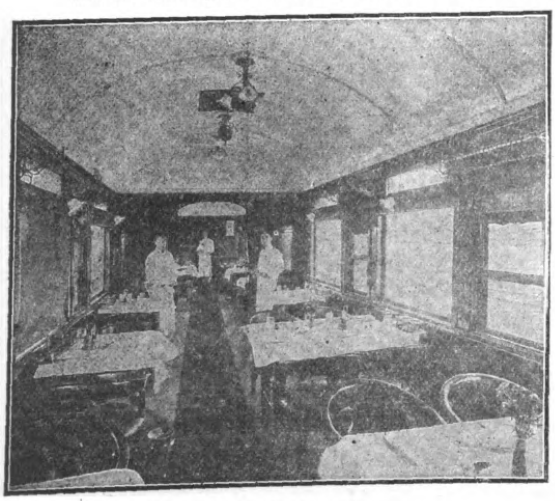
TRAIN DE LUXE AT TIENTSIN EAST STATION

The Peking-Mukden Line

Through service from Peking to Mukden, connecting at Mukden with the South Manchuria Express from Trans-Siberian Route. At Peking connection is made with the Peking-Hankow Railway for Hankow and Yangtze Ports, and Intermediate Points reached by the Chen-Tai Line to Taiyuanfu, the Tao-Ching Line, and the Peinlo Railway to Kaifengfu and Honanfu. Connection is also made at Peking with the picturesque Kalgan Line, "The road to the Great Wall." At Tientsin (Central) connection is also made with the Tientsin-Pukow line for Tsinanfu and Shanghai.

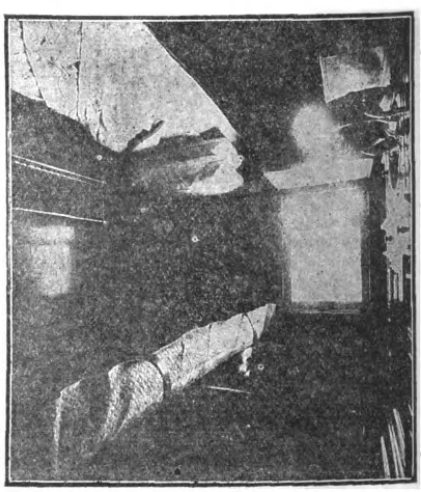
THE RAILWAYS OF NORTH CHINA PASS THROUGH THE MOST INTERESTING PART OF CHINA

PEKING: The Capital, with its Walls, Palaces, Temples and Tombs.—**TIENTSIN:** The Great Trade Center of North China.—**TONGSHAN:** The Largest Mining and Industrial Town in the Country.—**SHANHAIKWAN:** Where the Great Wall ends at the sea.—**NEWCHWANG:** The Busy Commercial Port of Manchuria.—**MUKDEN:** The Ancestral home of the Manchu Dynasty. A Miniature Peking, with its Walls, Imperial Palaces, Temples and Tombs.



DINING CAR ON TRAIN DE LUXE

The through trains are equipped with Buffet and Dining Car Service. A Comfortable, Modern Train De Luxe of Compartment Sleeping Coaches is operated in connection with the through service of the Trans-Siberian and South Manchurian Railways.



FIRST CLASS SLEEPING BERTH, TRAIN DE LUXE

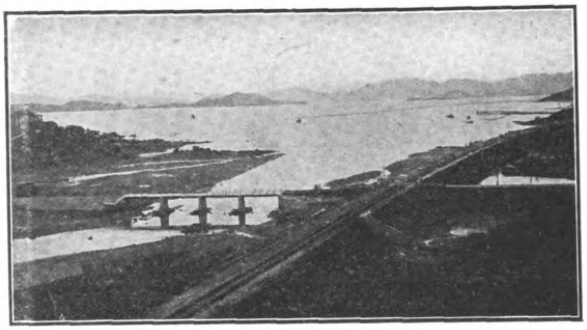
Through tickets to London and other places in Europe can be obtained at Peking and Tientsin from which stations passengers' luggage can be registered through to destination. Through tickets are issued and passengers' baggage registered through between the important Stations on the Peking-Mukden Railway and the South Manchuria Railway, Chosen (Korean) Railway and Imperial Government Railways of Japan.

For information regarding the many places of interest in China, Tourists will find "The Travellers' Handbook for China" with maps most useful. It is obtainable at any of the offices of Thos. Cook & Sons. The Chinese Government Railways Time Table book with Railway map can be had at any of the offices of Thos. Cook & Sons, and the International Sleeping Car Co., Hotels, Clubs and at all important Stations. Full particulars on application to any of the Stations or to the Traffic Manager of any of the Railways mentioned and on application to any office in America, Europe or the Far East of The Cie. International des Wagons-Lits, Thos. Cook & Sons, or

TRAFFIC MANAGER, CHINESE GOVERNMENT RAILWAYS (PEKING-MUKDEN), TIENTSIN.

CANTON-KOWLOON RAILWAY

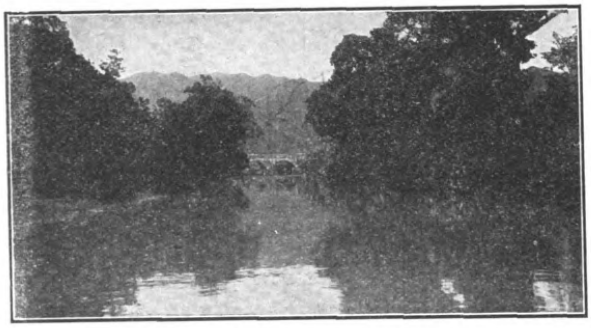
VIEWS ON THE BRITISH SECTION (22 MILES) **VIEWS ON THE CHINESE SECTION, 89 MILES. (Chinese Government Railways)**



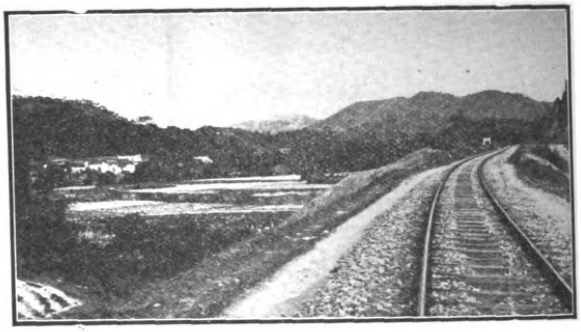
CANTON-KOWLOON RAILWAY—APPROACH TO KOWLOON

SCENERY NEAR CHEUNG MUK LOW—C. K. RAILWAY

QUICKEST AND CHEAPEST ROUTE BETWEEN CANTON AND HONGKONG THROUGH VARIED AND BEAUTIFUL SCENERY

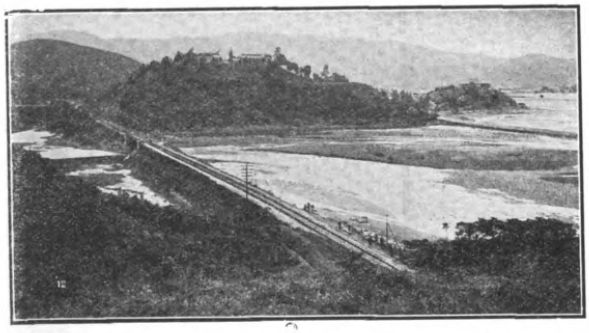


CANTON-KOWLOON RAILWAY—SCENE ALONG ROUTE

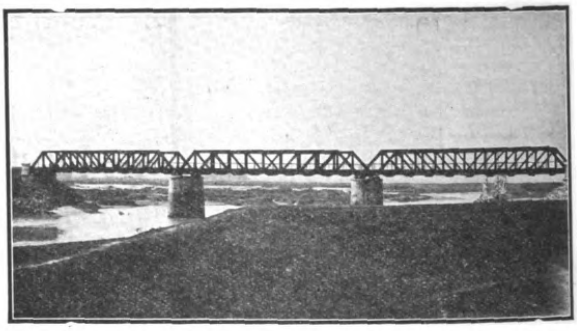


SCENERY ALONG ROUTE

THREE EXPRESS CORRIDOR TRAINS EACH WAY DAILY—HOT MEALS AND OTHER REFRESHMENTS SERVED

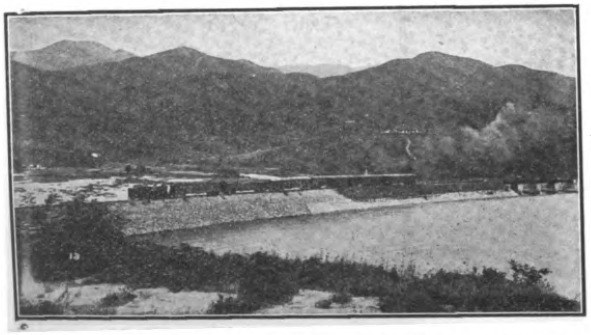


CANTON-KOWLOON RAILWAY—CROSSING TIDE FLATS

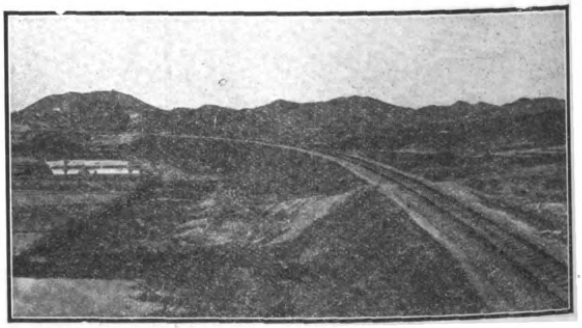


KAN SUI BRIDGE—C. K. RAILWAY

3½ HOURS BETWEEN UP AND DOWN TRAINS FOR BUSINESS MEN OR TOURISTS AT CANTON OR HONGKONG



CANTON-KOWLOON RAILWAY—EMBANKMENT APPROACH TO BRIDGE



GRAND CURVE NEAR SHEUNG PING

TIME TABLE

Leave Hongkong (Kowloon) *7.55, 9.15 a.m., *11.55 p.m., & *3.15 p.m.
Arrive Canton (Tai Sha Tou) 11.45 a.m., 5.34, 3.50 & 7.15 p.m.

Leave Canton (Tai Sha Tou) *7.25, 8.35 a.m., *12.25 p.m. & *4.10 p.m.
Arrive Hongkong (Kowloon) 11.55 a.m., 5.35, 4.00, 7.50 p.m.

Special terms and special trains for large tourist parties. For further particulars see advertisements or apply to
*Express The Manager (British Section) Kowloon, HONGKONG. The Administration (Chinese Section) CANTON.

Volume XIV

January 1918
The Flood Damage to the Peking-Hankow Railway Three-page illustrated description of the recent heavy flood damage.
Extension of Ssupingchieh-Chengchiatung Railway An extimate of 1.5 million Yen was required for a 130-mile extension to Kailu.
Mukden-Antung Line Cut-Off A new 10 mile extension from Suchiatun to Chenhsiuangtun was planned reducing the overall distance of the Mukden-Antung Line.
South Manchuria Rolling Stock A large expansion of rolling stock and new locomotives was planned over the next fiscal year
Tung-Pu (Shansi) Railway The revolution had stopped this line from being complted and earlier work completed as being undone by rails being removed.

February 1918
The Chinese Government Railway System in 1917 J.E. Baker, an adviser to the Ministry of Communications reported that profits for the previpus year will total about $17 million.
China and the Chinese Eastern Railway Chinese troops had been sent to Harbin because the outbreak of anarchy arising from Bolshevik activities.
A Product of the Railway A short editorial outlining how Harbin itself was the product of the CER in an area previously desolate.
The South Manchuria Railway Workshops A description of the car and locomotive building plant at Shakako near Dairen (Dalian) 16 photos and sketch map.
A Railroad Route into Szechwan An update on the Siems-Cary Railroad & Canal Co.'s survey to find a route.
Where Anglo-American Co-operation Can Avail An editorial speculating that U.S and British interests might co-operate on railway building in China.
Freight Cars of S.M.Ry.Report on the numbers of cars owned by the railway.

March 1918
Japan-China Through Traffic A summary of routes which had been agreed upon in conferences.
The Shih-Chen Loan A loan of Y. 2.6 million for the Szepingchieh-Chengchiatung Railway had been signed.
Chinese Railway Profits Profits reported as $13.5 million for 1917.
Through Traffic In Shantung An agreement had been reached between the Shantung Rly & the Tientsin-Pukow Rly.
Fifty Ton Electric Locomotives Description of the new electric locomotives for the Fushun Collieries.

April 1918
The Railways of Manchuria and Korea A report on the South Manchuria Railway and the Korean connecting lines. Photos and route map.
China's Railways and the Soldier Pest A report explaining how marauding soldiers were occupying railway carriages and ruining the interiors. They were also abusing the services, demanding trains and delaying schedules etc. Railway officials were powerless to stop this.
No Siberian Mails The Postal Commissioner reported that all trans-Siberian mail by rail had come to a halt.
South Manchuria Railway Traffic Returns Figures for January 1918.

May 1918

The Railway Administration of China An editorial discussing the merits of the various Chinese officials responsible for the railways

Railway Car Conservation in China A further report by J.E. Baker, an adviser to the Ministry of Communications. He discusses the management of rolling stock and the rail freight business.

The New Departure in Banditry An editorial describing how banditry and kidnapping of European engineers etc. was playing havoc with China's stability and development.

Manchurian Railway Reform General Horvath (CER) advised that American instructors would introduce reforms .

S.M.R. Loan A floatation for a new loan of Yen 10 million had been agreed.

Chinese Railway Collision on 2 April a collision had occurred between two freight trains on the Tientsin-Pukow line south of Tsinan.10 workers killed.

Railway for Mongolia Further update on the Ssupingchieh-Chengchiatung Railway proposed extension.

June 1918

The Partnership Between Railways and Agriculture in China Editorial explaining the valuable contribution which algricultural traffic makes to the success of the railways.

South Manchuria Railway Express Suspended The closing of the Trans-Siberian traffic had forced the closure of all express services on SMR and Korean lines.

Through Parcel Traffic W.e.f. 1 June through tickets for passengers and cargo would be available for SMR and Szepingchieh-Chengchiatung Railways.

The Lung-Hai Railway This proposed line was being resurrected after a long delay.

Freights and Roubles C.E.R officials had been dispatched to Changchun to determine what was causing a shortage of cargo being forwarded to Harbin.

Landslide in Manchuria A landslide had derailed a train near Antung causing serious damage.

July 1918

A Low Grade Route to Szechwan The Siems-Cary plan for a route to Chengdu was possible using the most recent survey but it was still unsure if this woud ever get built. Description of the route with sketch map and scenes of the remote territory through which it pass.

Great Manchurian Coal Seam Editorial criticising Chinese superstitition and negligence for their failure to develop the Fushun coal deposits, now in Japanese hands. Description of the open cast mines at the "Oyama" and "Togo" pits.

Another Link Between Korean and Chinese Railways Bief description of a new line to be built between Kirin and Hweining on the Korean border..

Chinese Railway Reports Financial statistics for the Pekig-Mukden & Peking-Suiyuan Railways in 1917.

Railways -Transportation Conference was arranged on 24 June.
The Chi-ho Bridge on th Kin-Han line had been completed.
The Szepingchieh-Chengchiatung Railway had been open for half year.

Chinese Eastern Railway Lieut-Gen Horvath had been appointed Managing Director.

Congested Supplies at Changchun The congested goods depot at Changchun was easing as further goods arriving by the CER had been stopped.

Light Rail Line from Sungari to Inner Mongolia A Mr Kao had applied for permission to build a line.
Kowloon-Canton Railway Branches The Annual Report (British Section) stated that surveys had been taken for an extension of the line to Taikoktsui and to Taiwan Bay on the eastern side of the peninsula.

August 1918
The Nanchang-Kiukiang Railway An explanation by Li Sheng-tao why building the line had made no progress.
Peking-Suiyuan Railway- Latest Revenues reported for the first half year.
Railway Extension Negotiations were progressing for a loan to extend the Ssupingchieh-Chengchiatung Railway to Kailu.
South Manchuria Railway The annual accounts had been presented at a shareholders meeting.

September 1918
Chinese Railway Reports Financial statistics for the Shanghai-Nanking & Kowloon-Canton (Br. Sec.) Railways in 1917.
Cessation of Railway Construction Work The Siems-Cary group were halting their work projects in China. Every scrap of possible energy was needed for defeating the Germans and bandits in China were kidnapping engineers for hard silver.
China's Railways The first full report for a year's operations had been published by the Ministry of Communications covering the year 1915
S.M.R and Kirin-Changchun Railway Through traffic on these lines had been inaugurated
Ssupingchieh-Chengchiatung Railway The extension to Kailu was likely to be fixed soon.
New Rolling Stock for S.M.R. New stock had been ordered from USA.

October 1918
Floods in South China D.S. Williams , an engineer fn the Yueh-Han Railway had complained about the lack of controls over waterway conservancy measures , blaming the flood damage on negligence.
China's Shortage of Railway Cars An editorial queries what was being done to improve the situation.
Railway to Chinney Mountain The Peking-Suiyuan Railway was contemplating building a line from Hsuanhuafu to Yentungshan ("Chimney Mountain") which is rich in coal and iron ore deposits.
Light Railways for Mukden General Chang Cho-ling, the new High Commissioner for the Three Eastern Provinces had proposed a line to be known as the Tung-Yi Light Railway Company.
Wuchang-Changsha Railway Since completion this line had been mainly used by troops fighting between North and South.
Ssupingchieh-Chengchiatung Railway The formal opening of this line had been postponed until September 15, even though opened earlier for traffic.
Tatung Branch Railway This branch line on the Peking-Suiyuan Ry. had been completed and trains running since 1 October.
Peking-Suiyuan Line Monthly operating figures for July.

November 1918
New Japanese Railways in Manchuria and Shantung The Industrial Bank of Japan had announced a Yen 50 million loan for China to build for railways in Manchuria dn Mongolia and two more in Shantung and Kiangsu. This action indicated that the country was "ignoring the Chinchow-Aigun Railway

Agreement Rights held by America". (These "rights" were part of a preliminary agreement signed back in 1900 with U.S. financiers but never executed). Includes one sketchmap illustrating various country's railway construction "rights" in northern China, Monglolia and Manchuria etc.
South Manchuria Railway Traffic Returns Earnings figures for August 1918.
Peking-Suiyuan Railway Operating figures for the month of August 1918 with comparison of 1917 figures.

December 1918
Nanchang-Kiukiang Railway Extension The extension of this line from Nanchang to Foochow and Fukien Provinces was under negotiation. A group of Janaese banks from Taiwan and Chosen were also involved and discussing a loan.
China's Railways The Ministry of Communications was being urged to address the serious problem of a shortage of locomotives and rolling stock.
Standard Locomotives for Chinese Railways An American official of the State Department describes China's shortage of locomotives and also states how earlier engines purchased were too small. There was a need for standardisation and a decision had to be made as whether these should be " of American design or a European model to the detriment of American Interests" .
Kirin-Changchun Line Work was now progressing on a tunnel at Tumenling Pass, which had been due to start the previous spring.
Advertisements for South Manchuria Railway, Peking-Hankow Line, Peking-Mukden Line, Kirin-Changchun Line (with Timetable) , The Pienlo Railway, Shanghai-Nanking Railway, Cheng-Tai Railway (Shansi Line), Peking-Suiyuan Line, Japan – Imperial Government Railways with tickets to China's Railways, The Tao-Ching Railway, Canton-Kowloon Railway , Tientsin-Pukow Line, American Locomotive Co.(locomotives for the Peking-Hankow Railway), Baldwin Locomotive Works - China Agents: Anderson, Meyer & Co, & Shantung Railway – "The shortest roure between Japan and North China".

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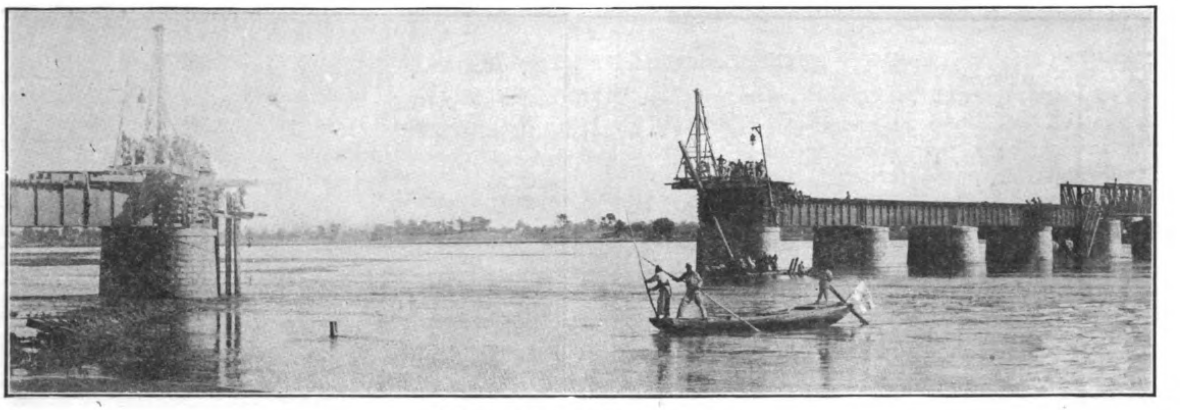


A Breach in the Hsinloho Bridge

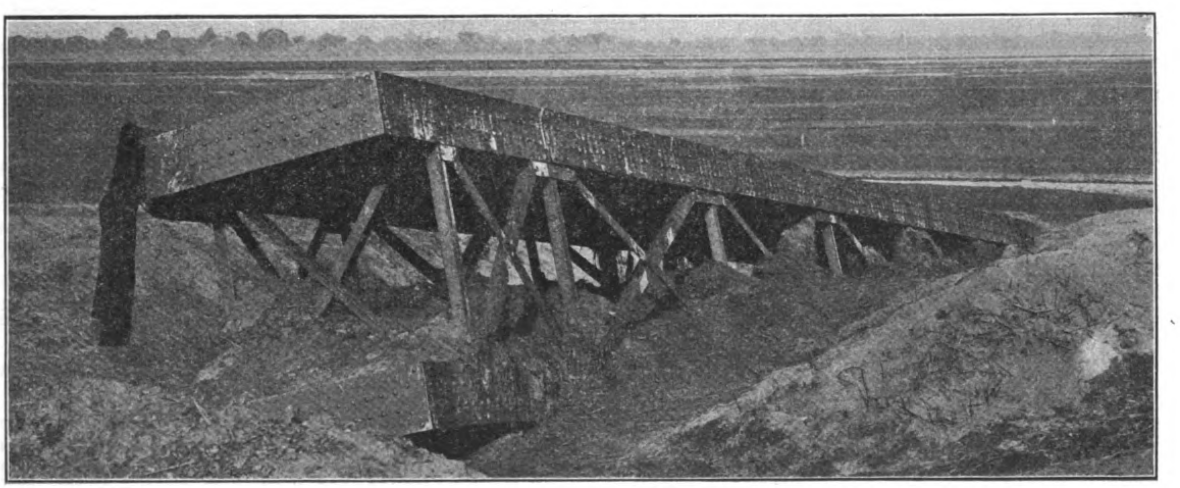
The Flood Damage to the Peking-Hankow Railway

The phenomenal floods which occurred in the northern part of China during the summer, and which have been referred to in previous issues, continue to be the source of suffering and the subject of serious investigation on the part of those engineers eager to find some method of preventing them in the future.

Over vast stretches of country waters still form a lake, and with the advent of winter this was transformed into solid ice. The outlook is decidedly serious for all those who have hitherto been supported by the inundated land, nor is there any telling when the waters will subside and allow the land once more to be cultivated. In the meantime, the thousands of people who have been forced from their property are living as refugees in Tientsin and other cities, or are clinging to any spot which escaped inundation in the vicinity of their submerged homes in order that they may begin to rebuild their tumbled mud houses immediately opportunity presents itself. For these unhappy sufferers the situation is terrible. They have lost everything in the shape of property except the little they could tie up in bundles and carry to the high and dry spots, and the fearful cold of the North China winter will intensify their misery.

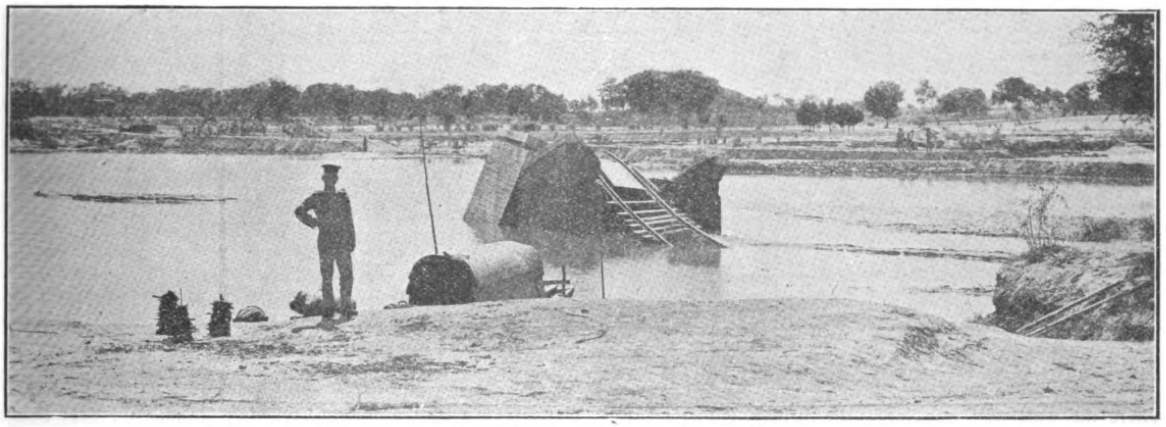
No accurate estimate of the total damage done by the floods has yet been made, nor is it possible to make one, but some idea of the force of the waters and the resultant destruction of property may be gathered from a glance at the photographs illustrating the damage done to the Peking-Hankow Railway. It will be realized that when such work as this has been unable to resist the strength of the tumultuous flood no Chinese village could at all withstand the pressure, and therefore all homes and villages unfortunate enough to be in the affected radius must have disappeared.

At one place where the waters accumulated to a great depth, as a result of the waterways in the railway embankment being too small to carry off such abnormal floods, foreign passengers who were marooned were afforded the pitiful sight of a large village in process of inundation, and saw hundreds of houses collapse in a

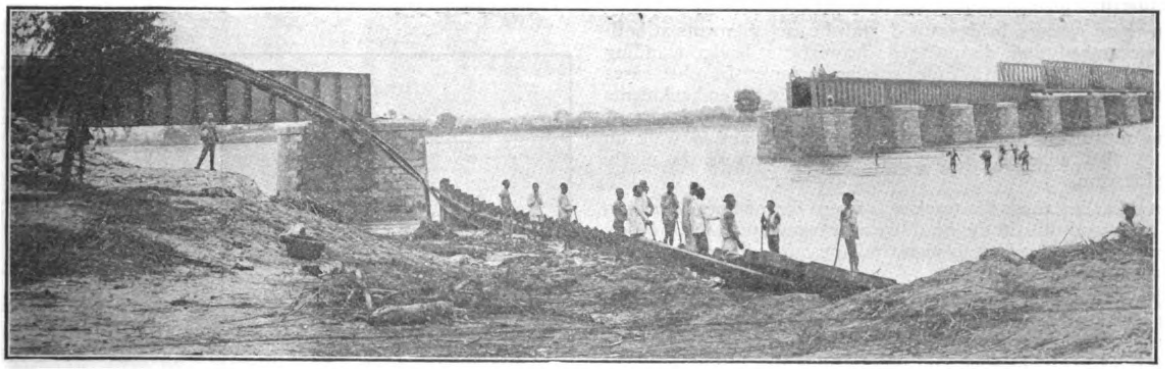


The Force of the Flood May Be Estimated from the Fact that This Steel Girder Said to Weigh "Several Hundred Tons" Was Washed Fourteen Kilometers Downstream from the Bridge over the Hsinloho

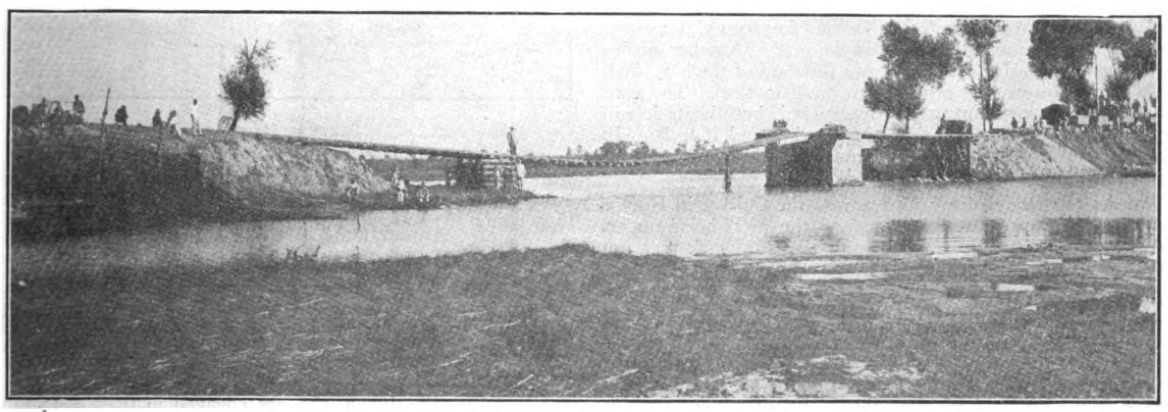
Views of Damage Done by Floods to Railway Bridges



All that Was Left of a Bridge



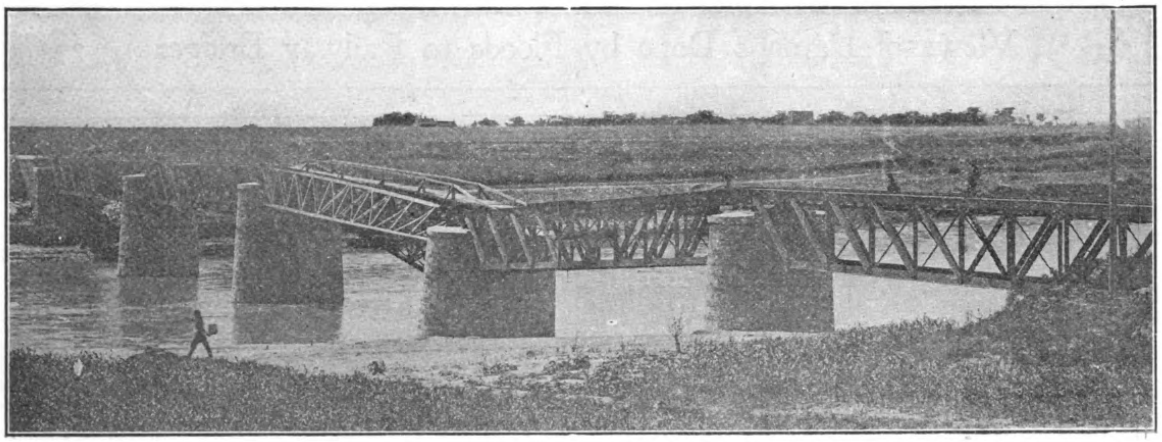
Three Spans and Two Piers Completely Washed Away



Destroyed Embankment South of Chengtingfu

very short time as the mud walls became saturated with the rising waters. So fast was the disappearance of the houses in the flood that they seemed simply to melt away, as in fact they did. And this was the fate of thousands of villages, and millions of homes.

Altogether some five hundred miles of line were involved. There were twenty-three breaches of considerable size, some extending to a width of four miles. They were not due to any inferior work, or as a result of the embankments being too low. All the embankments were higher than the flood, and all masonry was of the best. The damage was due solely to the phenomenal nature of the rainfall, the changing of river courses, and the fact that sufficient openings in the embankment had not been provided for such a contingency.



BRIDGE OVER THE CH'I HO IN CHUN HSIEN, HONAN PROVINCE

Where the waterway was large the bridge withstood the force of the current, high as the flood was, and in this connection may be cited the long bridge over the Putow River, near Chengtingfu, which came through the ordeal uninjured.

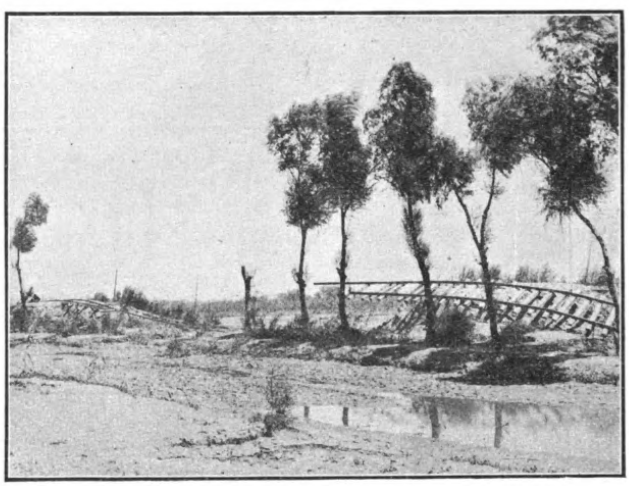
In some cases a bridge stood, and the embankments at both ends succumbed and disappeared, leaving the bridge standing intact in the middle of a wide, roaring torrent. In other cases the track was entirely washed away; while again the embankments went, and left the track suspended in mid-air as a sort of suspension bridge, it being possible for pedestrians to walk on the ties that adhered to the rails, and thus cross the newly created stream.

In other instances the track was swept out of line, turned on edge, and stood thus in the mud like an exaggerated picket fence. In the few cases where bridge and masonry disappeared they were short spans.

One of the most striking freaks of the flood was performed at the Hsinlo River where there is one of the largest bridges on the line. The damage was, in fact, severe in the whole vicinity of this river. The masonry on which the bridge rested, with the exception of two or three of the piers, was not damaged, but the force of the water was so great that it undermined and swept one pier completely away, and carried one huge steel girder weighing several hundred tons downstream some fourteen kilometers, where it was found partially buried in the mud. Another girder did not fare so far. It is deep down in the mud of the river bed, and whether it will ever be retrieved, is problematical. The span which voyaged downstream may be recovered, but the task will be heavier for the engineers than the flood found it to be. In spite of the fact that some of the spans were thus removed the remainder of the bridge was uninjured.

The deck lattice-girder bridge across the Chi-ho, in Honan, was seriously affected, owing to one of the piers being undermined and partially sinking. Though the steelwork was not dislodged it was seriously wracked.

The task of repairing this line, while the floods still continued, was a great one, but was tackled with determination by the Managing Director, Dr. C. C. Wang. Immediately the waters subsided sufficiently to allow ideas of how to proceed to be formed, he visited the whole of the affected area, and, with the engineers, began the work of renovation. By offering rewards to the workmen speedy results were obtained, and thousands of laborers were employed in rebuilding the embankments and putting up temporary bridges to carry the trains over the rivers where the bridges had been put out of commission. The personal interest taken in the work by the Managing Director,—rather an unusual thing in China, and therefore striking and to be highly commended,—inspired the workers to such an extent that traffic was resumed long before the estimated time, and travelers and freight were able to cover the distance between Peking and Hankow without inconvenience and without much loss of time in comparison with the previous schedule, despite the fact that two other floods succeeded in removing much of the new work. In the meantime, the repair of the damaged bridges is being pushed forward as rapidly as steel and other necessaries can be procured.



SOUTH OF HSINLO-HSIEN

For the speedy manner in which initial difficulties were surmounted the greatest credit is due to Dr. Wang, who thoroughly demonstrated the value of his foreign training and experience.

NIPPON YUSEN KAISHA TO BRAVE U-BOATS

Merchants in Japan who are engaged in trade with France and Italy will be glad to learn, says the Japan Advertiser, that the Nippon Yusen has decided to brave the submarines and revive its direct line between Yokohama and Marseilles, which has been suspended for some time because of U-boats' activity in the Mediterranean. The Nippon Yusen Kaisha recently decided to start a line between Yokohama and Port Said, with the object of helping trade between Japan and France. Owing to the submarine dangers, the company proposed to dispatch steamers only as far as Port Said. But now the company has put on a connecting steamer and will land cargo at Marseilles.

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

Extension of Ssupingkai-Chengchiatun Railway.—The Ssupingkai-Chengchiatun Railway, which has just been completed, leaves very much to be desired as a medium of opening up Eastern Mongolia unless it is extended from Chengchiatun to Kailu, a distance of one hundred and thirty miles. In addition, the construction of a permanent bridge over the Liao to take the place of the temporary wooden one, will have to be put in hand as early as possible. For the proposed extension of the Line to Kailu. Y.1,500,000 is reckoned as sufficient. The span of one hundred and thirty miles intervening is almost level from end to end and there are no broad rivers to be crossed on the way. The construction work is expected to take not more than two years. In order to put the Ssupingkai-Chengchiatun Line on a thoroughly permanent footing, the investment of some Y.2,000,000 is deemed necessary. According to the original understanding, the Yokohama Specie Bank will be offered the first chance to furnish the required funds.

Mukden-Antung Line Cut-Off.—The South Manchuria Railway plans to construct a new ten mile line between Suchiatun on the main line and Chenhsiangtun on the Mukden-Antung Line in the next fiscal year. Surveys will be commenced shortly. At present the Mukden-Antung Line crosses the Fushun Line at Fuan Station and the Main Line at Hunho Station, causing no little inconvenience. It is thought more advisable to make Suchiatun the junction station not only for the Fushun Branch Line, but also for the Mukden-Antung Line. The new line under contemplation is to start at Suchiatun and to proceed eastward along the Shaho River, joining the Mukden-Antung Line at Chenhsiangtun south of Fuan, thereby doing away with the existing section between Hunho and Chenhsiangtun and reducing the mileage of the Mukden-Antung Line by that distance.

South Manchuria Rolling Stock.—The South Manchuria Railway Company has planned to construct eight hundred goods cars and three hundred locomotives as a piece of continuation work extending over the fiscal years of 1918 and 1919. This rolling stock construction program has been further supplemented by the intended construction of three hundred goods cars and one hundred locomotives for the exclusive purpose of transporting coal and materials for the Anshan Steel Works.

It appears that the Company's Management has in mind the inclusion of an appropriation for buying at least six hundred goods cars and a dozen locomotives in the estimates for the next fiscal year. For this purpose will be wanted some Y.6,000,000 at the rate of Y.150,000 per locomotive and Y.7,000 per goods car.

The above estimate is of course subject to variation according to the price of iron and steamer freights and is based upon a plan to buy not materials for construction, but ready-made rolling stock. This is reported to be decidedly cheaper than the purchase of materials. All these purchases are to be made from the United States.

Congestion of Goods in Japan.—Altogether 830,000 tons of goods are now lying at the different stations of the Japanese Imperial Government Railways. Setting aside 320,000 tons of stone and timber and 50,000 tons of stock for the use of the railways, the remaining 460,000 tons include rice, fertilizers, and general merchandise requiring immediate transportation. The Government Railways, with a view to supplementing shortage of goods cars, is pushing forward the construction of hundreds of goods cars at the workshops by offering a bonus of Y.300 a car for speedy completion.

Mukden Tram Car Co.—The horse car tramway connecting the railway station of Mukden with the City carries about 5,000 passengers on an average a day. About one hundred and fifty trips are made daily with thirteen cars with a staff of twenty-seven drivers and as many conductors. Some one hundred and sixty horses are employed. During November, the tramway service carried 157,357 passengers and the fares amounted to S. Y.13,588, being increases by 34,670 passengers and S. Y.3,777.

Tung-pu (Shansi) Railway.—What appears to be the last chapter in the history of the ill-fated Tung-Pu Railway in this province now is being enacted, says a North China Daily News correspondent. The first section of this line, from Yützu, where it connected with the Chêng-Tai line to this city, was nearing completion at the outbreak of the revolution in 1911. Rails had been laid six or seven miles from Yützu. The revolution put a stop to the work and various efforts to revive the enterprise in recent years have proved abortive. Now gangs of men are at work taking up the rails, as the world-wide demand for steel has made them valuable. They are being shipped away eastward as fast as delivered at the Yützu station.

Railway Service in Japan Congested.—The rise in the price of daily necessaries and other articles in Japan in recent years has to a certain extent been attributed to the lack of carrying capacity on the State lines. Upwards of 600,000 tons of goods, including daily necessaries, have accumulated, notwithstanding that the Railway Board has recently increased the number of employees and goods vans. The quantity of goods and the number of passengers carried last year showed an increase of from eight to nine times as compared with the beginning of the Taisho Era in 1912. The condition of the State lines to-day is such that they must ere long be thoroughly repaired. The present narrow gauge system in this country is a disgrace to the Japanese, who think they are a first-class nation, says the "Hochi," which advises the Railway authorities not to raise passenger fares and freight rates but to lower them as far as possible, which was a government pledge on taking over the lines.

Shanghai Tramways.—The following is the traffic return of the Shanghai Tramways (Foreign Settlement) for December, 1917, and for 12 months ended December 31, 1917, with figures for the corresponding periods last year:

	December, 1917	December, 1916
Gross Receipts ...	$135,468.13	$136,880.87
Loss by currency depreciation ...	29,147.93	27,899.46
Effective Receipts Mex.	$106,320.20	$108,981.41
Percentage of loss by currency depreciation... ...	22.80	21.58
Car Miles run ...	330,980	345,231
Passengers carried	6,163,290	6,213,899
	12 Months ended 31st December 1917	12 Months ended 31st December 1916
Gross Receipts ...	$1,613,632.48	$1,537,577.53
Loss by currency depreciation ...	354,775.96	387,509.61
Effective Receipts Mex.	$1,258,856.52	$1,150,067.92
Percentage of loss by currency depreciation... ...	23.26	26.72
Car Miles run ...	4,015,217	3,803,980
Passengers carried	73,461,492	69,089,432

SHIPPING

Japan Bans Ship Sales.—Though the authorities have somewhat relaxed the restrictions on the chartering of Japanese vessels to foreigners, the sale of vessels to foreigners is practically under an embargo. This has led to the suspension of operations at some of the shipbuilding concerns, which sprang up when the shipping market was booming some time ago. In order to relieve the difficulties of these concerns, some shipbuilders are taking steps to get Government permission for the sale of comparatively small vessels to foreigners. It is reported that of late there have arrived quite a number of inquiries from France and Italy regarding vessels of less than 2,000 tons. In view of these offers the shipbuilders and shipping men concerned have arranged for appealing to the Government to allow the alienation of vessels of 1,500 or 1,600 tons. They point out that this would serve the highly desirable purpose of resuscitating the moribund shipbuilders without incurring the loss of large and superior vessels which the Government most fears. At the same time the Government, it is further pointed out, is anxious to contribute to the tonnage at the Allies' disposal, and this desire would be most easily realized if the permission asked for was granted.

Japan's New Naval Program.—The new program calling for Y. 300,548,000 for an expansion of Japan's naval forces, to be completed in six years to come, beginning with the fiscal year 1918-19, was recently explained at the Navy Office. With this appropriation, the navy is to build two battle cruisers of the latest type; three cruisers of the middle size; eleven big destroyers; thirteen smaller destroyers; forty-eight submarines; and six specially commissioned boats. Now that the last expansion program of the navy, which is now in

THE FAR EASTERN REVIEW

COMMERCE :-: ENGINEERING :-: FINANCE

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The Chinese Government Railway System in 1917

Profits of Chinese Railways in Last Year Will Approximate a Nominal Total of $17,000,000

[BY MR. JOHN EARL BAKER, ADVISER TO THE MINISTRY OF COMMUNICATIONS, PEKING]

The close of the year just past has not been accompanied by reflections flattering to China nor comforting to Chinese who have a filial regard for their mother country. Civil war between the two great divisions of the land, brigandage a flourishing occupation, the currency system demoralized, floods in every river basin,—the retrospect cannot be otherwise than sad. As a publicist very recently said, "No wonder that 1917 went out with a groan."

But can nothing good be said as the clods fall on the coffin of the old year? Have all avenues of life, all departments of national endeavor succumbed to the general chaos? Have there been no forward forces able at some points to push aside opposing obstacles and make progress for some institution or industry? The answer is important to China and her well wishers. The following paragraphs will consider this question as it applies to the Government Railway System. The answer will not be given,—cannot be given. So much depends upon the point of view. All that can be done is to state the facts that are at hand, suggest points of view, and let the reader take his choice of pessimism or optimism.

Unfortunately for this review of the year the facts at hand are somewhat meager. In a business covered by one roof even within the confines of a single city it may be and generally is possible within a few days after the close of the year to state the results of the concern's activities during the year. But with such a complex organization as a railway needs, and extending over hundreds of kilometers of line, much more time is required. For example: Engineers must have time to assemble their data, make computations, and post their own records. Then their reports must travel to the next superior, and by him be scrutinized. Perhaps some items are in doubt. Such doubts must be cleared up before the data can be merged with those from other similar jurisdictions. And so the individual items proceed from one step in the hierarchy of the organization to another, losing their individuality, but each influencing the final result. Hence it is the practice in countries with a longer railway history than China's to allow some three months for the closing of the accounts for any month. When the fact is considered that many of the shorter Chinese lines have no rail connection with Peking, and that military disturbances have been frequent, it is not strange that reports from some of these are five or six months back of the current data. Without accurate data, it is a rash undertaking to make an irrevocable decision as to the year's results on a system whose extremities are so far apart as Kirin and Canton, Fengchen and Changsha, to say nothing of the projected lines upon which reconnaisance and survey work is under way. It is precisely in these missing months that the pessimists find their arguments.

It will be several months before the railway earnings in 1917 can be stated accurately. But in the meantime estimates may be made, and to make such estimates a few facts like those following may be useful.

Beginning January 1, 1915, the new uniform classification of accounts went into effect. Because of the lack of uniformity in the accounts of the several lines prior to 1915, it is unsafe to draw comparisons with those earlier years. But it is well known that earnings have been steadily climbing, and the rate of growth between 1915 and 1916 may be measured fairly accurately. Operating revenues—that is, earnings from handling passengers, troops, goods, cattle, parcels, etc.—in 1915 were $57,062,000, to use round numbers. In 1916 they were $62,761,000.—a gain of more than five and a half million dollars. A similar gain in 1917 would result in a figure above $68,000,000. Returns for the first six months of 1917 are complete, although subject to future adjustments and corrections of a minor nature. The operating revenues of the system for this period reached an aggregate of $33,820,880. Manifestly if the second half of the year did as well as the first half, total operating revenue would reach the high total for the year, of over $67,000,000. The warrant is not weak for assuming that the second half of the year might duplicate the record of the first, disregarding the disasters which occurred.

Chinese Government Railways Operating Revenue

	Six Months' Period Based on Monthly Reports FIRST	SECOND	*Years, from Annual Reports*
1917	$33,820,880		
1916	31,036,261	$31,732,784	$62,763,868
1915	28,045,620	29,016,739	57,062,359

As the basis is different in each case the figure for the year will not agree exactly with the sum of the two half years.

In 1915, the second half year's revenues exceeded those of the first year by nearly a million dollars. In 1916 the second six months' exceeded the first's, by nearly $700,000. Ordinarily

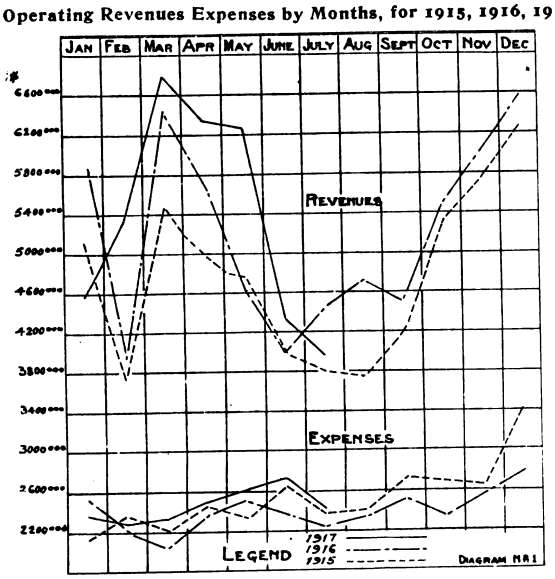
then, the inference would follow that in 1917 the second half year would exceed the first in operating revenue.

But what of floods and troop movements? Has there not been a setback of millions instead of gain? These disturbances occurred almost entirely during the latter half of the year, for which returns are incomplete. On July 27, floods broke the line of the Peking-Hankow, and through traffic could not be resumed until October 29, three months later. On August 8, the Tientsin-Pukow suffered similarly, and remained closed to through traffic until November 26. On the latter line, shift was made to keep up passenger traffic, by means of a launch running from the International Bridge in Tientsin down the river to the river terminus of a short branch line. By this means, also, through passenger service from Peking to Hankow was later established,—using the new Lung-Hai line as a connection. But through goods traffic was effectively stopped on both these lines for over three months. In addition, troop movements in connection with the anti-monarchy maneuvers, and the subsequent disaffection of the South resulted in a serious crippling of the freight service by reason of lack of equipment. While the two lines mentioned were the principal sufferers from these two causes, all their connections naturally were affected also. The revenues of the Peking-Hankow fell off more than a million dollars in August and undoubtedly September and October figures will show similar results. However, the Tientsin-Pukow returns for August were scarcely lower than those for the same month in 1916. It will be remembered that only the Tientsin terminal was cut off. The Peking-Mukden, which was the principal line affected by the anti-monarchy maneuvers in July, actually showed an increase of $36,000 for that month. (How much of the revenues of this month the railways will be able to collect from the Ministry of War is another matter.)

The losses due to the floods on the Peking-Hankow are serious. For the three months of interruption they amount, perhaps, to over three million dollars. But this leaves a very comfortable gain for the system year if estimates of the normal revenues at sixty-eight millions be allowed to stand. The following diagram may assist in guaging the reliability of such estimates:

CHINESE GOVERNMENT RAILWAYS

Operating Revenues Expenses by Months, for 1915, 1916, 1917

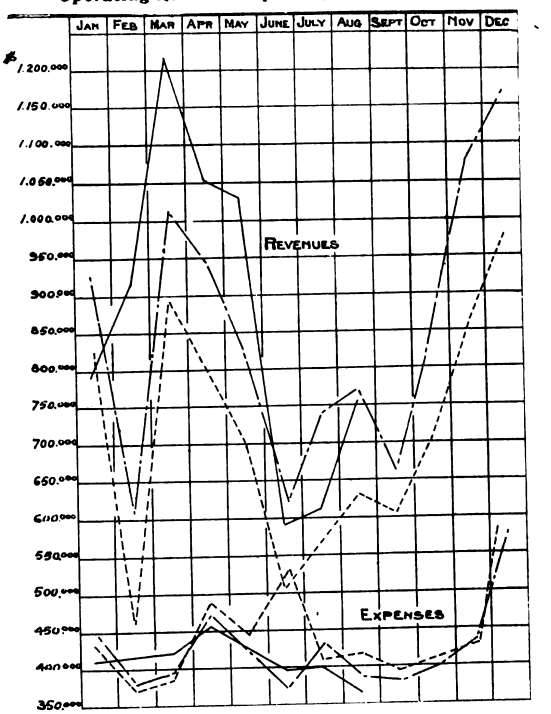


From the above diagram it is apparent that there is a very well defined seasonal fluctuation in revenues. Diagrams No. 2 and No. 3, below, show the participation in this fluctuation of the two Tientsin-Pukow line and the Shanghai-Nanking line.

It may be stated as a fact that this fluctuation is almost identically the same on the Peking-Mukden, the Peking-Hankow, and the Peking-Suiyuan lines. Crop moving time leads to coal moving time. Thus autumn and winter months yield the high revenues of the year. Now the 1917 crop has been light because of drought as well as flood. The autumn months were fairly mild. How much have these facts reduced tonnage of goods carried and the willingness of people to travel? Your guess is as good as mine.

TIENTSIN-PUKOW LINE

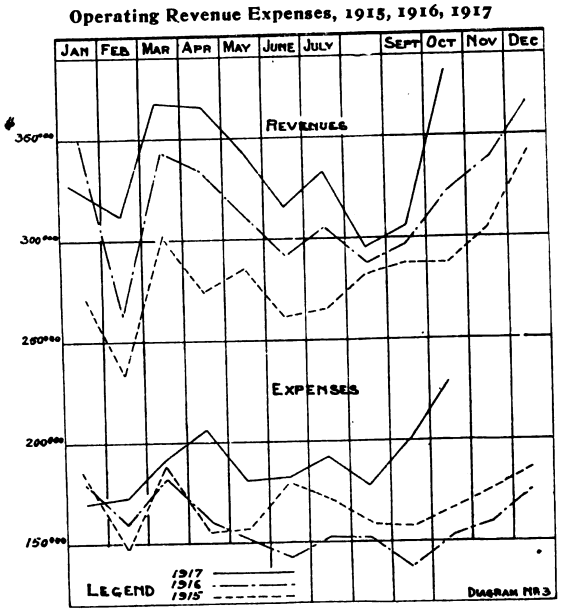
Operating Revenue Expenses, 1915, 1916, 1917



Offhand, it would seem to be a miracle if the revenues of 1917 equaled those of 1916,—what with drought, flood, and military disorder. However, from the results reported for July

SHANGHAI-NANKING LINE

Operating Revenue Expenses, 1915, 1916, 1917



and August (as indicated by Diagram No. 2), the Tientsin-Pukow line is not falling much behind its 1916 record. The flood losses at the north are probably offset by natural growth of traffic, and it has always labored under military burdens. The decreases on the Peking-Hankow are perhaps offset by the gains on other lines. On July 1, 1917, the total system had earned $2,784,000 more than in the same period in 1916, or $33,820,000 against $31,036,000, and such lines as the Peking-Mukden, the two Shanghai lines, and some of the shorter ones have kept up the same record in the later months for which reports have been received. To make the revenues of 1917 fall behind those of 1916, the last six months of 1917 must produce less than $28,943,000—nearly $5,000,000 less than during the first half of the year, and compared with $31,733,000 earned during the last six months of 1916, and $29,016,739 earned during a similar period in 1915. It is quite possible that the miracle may be achieved.

Assuming that 1917 revenues will be approximately the same as those for 1916, in what position financially does that place the Government Railway System? The answer may be found, in part, in the following table. (This table is based partly on preliminary returns and may be subject to minor corrections, but these are not likely to impair conclusions drawn from it.)

transportation. It has been said that rails cannot compete with water, especially in China; and in farming territory it is everywhere very difficult to work up a profitable volume of traffic. In some quarters at least, the results on these two roads had discouraged financing of projected lines through similar territory.

The Tientsin-Pukow began the year 1917 bidding fair not only to maintain the record of the previous year, but to show profits of a substantial sort. The first six months showed a total revenue of $5,665,000 compared with $4,949,000 in 1916. This increase of over $700,000 would have been safe during the latter months of the year if wagons had been available. During August and September thousands of tons of rice, barley, wheat, and other commodities were stored in the godowns or, lacking space inside, under mats at such points as Tsinan, Hsuchow, Pengpu, Pukow, and a score of less important stations. A certain mining company stood ready to offer traffic of $300,000 in excess of 1916, if assured of a regular and sufficient supply of wagons. The freight charges on all these goods would run into the millions. Meanwhile most of the equipment on the northern section was tied up in the Tientsin yard by the break in the line, and that on the southern section was commandeered by troops. It is to be hoped that shippers along this line will not become discouraged by their experience

Chinese Government Railways, 1916

Name of Line	Kilometers of Line	Operating — Revenues	Operating — Expenses	Per Cent	Interest on Funded Debt	Net after Payment (a) of all Income Items
Peking-Hankow	1,316	$20,466,622 (a)	$7,027,542 (b)	34⅛	$2,320,917 (a)	$10,770,381 (b)
Peking-Mukden	965	14,809,724	5,953,576	40⅛	773,033	8,184,449
Tientsin-Pukow	1,107	10,188,976	5,067,098	50¼	4,770,267	385,369
Shanghai-Nanking.. ..	327	3,818,270	1,904,015	50	1,318,358	491,444
Shanghai-Hangchow-N'po	269	1,798,504	1,444,826	80⅛	643,369	*261,076**
Peking-Suiyuan	429	3,895,780	2,317,139	59½	none	1,380,448
Cheng-Tai	243	2,184,027	1,290,367	59	653,741	174,396
Taokow-Chinghua.. ..	152	834,945	380,717	45½	380,000	nominal surplus (c)
Kaifeng-Honan	185	1,286,794	568,290	44	697,464	22,953
Kirin-Changchun	130	933,444	756,379	81	113,800 (d)	*50,000** (Est.) (c)
Chuchow-Pinghsiang ..	97	744,566	690,123	92⅔	none	51,775
Canton-Kowloon	143	794,223	829,663	104½	701,747	*787,009**
Canton-Sanshui	49	962,091	487,435	50⅔	none	388,138
Changchow-Amoy.. ..	32	45,902	72,245	150¾	none	*151,893**
Chinese Gov't Railways ..	5,444	$62,763,868	$28,789,712	46	$12,372,696	$20,599,375

* Italics indicates a debit balance.
(a) Interest on "Government Investment" has not been included in "Income Items."
(b) Decimals to nearest integer.
(c) Final corrected figures for last six months of the year, not reported.

In 1915, the sum left out of revenues after all expenses, interest, and other income charges had been paid, amounted to $9,671,000,—in round numbers. In 1916, this sum is more than double the 1915 figure, being $20,599,000. If a five per cent charge be made for the use of Government funds invested in system property, approximately $5,000,000 may be considered set aside for that purpose. Still, more than $15,000,000 remains as absolute profit, a sum treble its counterpart in 1915. The profit in 1915 would command the attention of financiers who had become interested. But there were some features in the 1915 results which did not help to arouse such an interest. For example, out of the fourteen present lines, nine did not earn sufficient to meet all their obligations in 1915. The argument could be made that the good locations for railroads seemed to be used up; that the profitable lines were merely lucky. But in 1916, five of these nine weak lines had pushed over into the paying column. Most gratifying of all, it is to see the long stretch from Tientsin to Shanghai, composed of two leading lines, able to assume full responsibility for yearly obligations. This leaves only four short, scattered lines composing only about ten per cent of the kilometrage in the system which are unable to stand alone. (See Diagram on the following page.) This result will bear comparison with the record of any other country.

The Tientsin-Pukow serves a territory essentially agricultural. The Shanghai-Nanking is in direct competition with water

this autumn, but recognize the unusual difficulties which the railroad encountered. Nevertheless 1917 sustains the evidence of 1916 that the Tientsin-Pukow can secure enough business to make it a valuable line in a financial sense.

Similarly, the Shanghai-Nanking, as indicated in Diagram No. 3, has manifested in unmistakable terms its ability to cope with the situation. Earnings in 1917, save in January, have been consistently above those of 1916, the same as the latter were above those of 1915. The ten months whose returns are in hand show an aggregate gain over the same period in 1916 of $255,000,—being $3,367,000 in 1917 compared with $3,112,000 in 1916. Indeed, the experience of this line, together with that of the Tientsin-Pukow, leads to the conclusion that after the first few years of a railroad's operation, waterways may develop business for a properly located road rather than destroy it.

It must be admitted, however, that a considerable position of the favorable results in 1916 is due to the decline in the value of gold, thus making foreign interest payments,—all of which are specified in gold—so much less, measured in terms of the Chinese silver dollar. On the other hand, war conditions that have made gold cheap have made railway supplies from abroad dear, when obtainable. When not attainable, some substitute must be made for the foreign article. Either course increases the expense of operation.

The saving in interest is therefore considerably offset by the increase in operating expenses and accordingly, the surplus stated in 1916, after all charges for the year have been met, should be fairly close to a statement of the inherent strength of the Chinese Government Railways. The decline in the price of gold continued through 1917. This by itself would tend to make a showing of a surplus for that year even better that in 1916. Whatever the result in total, it is assured that the Shanghai-Nanking will stay in the "paying" column in 1917, and the chances are fairly even that the Tientsin-Pukow will reappear there also. If so, this means that practically all the contiguous Government line—that is, the real "system"—is sound financially in every component part. (See Diagram No. 5).

CHINESE GOVERNMENT RAILWAYS

Lines with Surplus for year after payment of fixed charges compared with lines having Deficit after payment of Fixed Charges, 1916

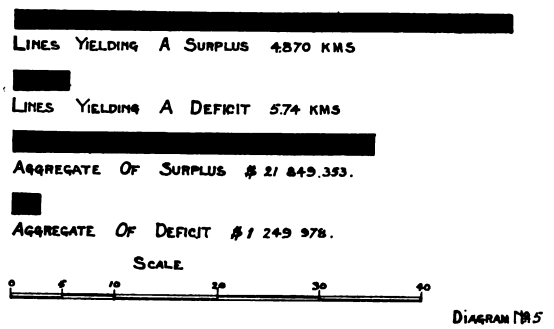


DIAGRAM NO 5

Little has been said so far about operating expenses, for it has seemed that revenue was the paramount subject. Railway operation is so near to an exact science, that under normal conditions much less uncertainty attaches to that phase of the subject than to the revenue side. Given sufficient revenue, very ordinary railway management will produce a handsome surplus. With new lines, revenue is always the great problem.

The ration of operating expenses to operating revenue in 1915 was 53 per cent, a very creditable figure. In 1916 it was still lower, 46 per cent. The additional $5,700,000 of revenue in 1916 apparently added nothing to the cost of producing it, for operating expenses, instead of increasing, decreased from $30,258,000 in 1915 to $28,790,000 in 1916, a saving of $1,468,000. Judging from the monthly returns now at hand, the 1917 figures will be considerably above those for 1916,—even exceeding those for 1915. Yet the first half of the year is not the significant portion. The following table makes it apparent that it is primarily the second six months which determines what the fluctuation shall be for the year. Diagram No. 1, also, may be studied in this connection.

Chinese Government Railways Operating Expenses

	Six Months' Periods Based on Monthly Reports		*Year Based on Annual Reports*
	First	Second	
1917	$14,709,497		
1916	13,980,549	$14,851,300	$28,789,712
1915	14,179,825	16,215,111	30,258,533

Taken together, this table and Diagram 1, indicate that normal expenses in 1917, would probably amount to something less than $31,000,000. But the floods have had their effect. The additional expense caused on the Peking-Hankow is estimated at $1,000,000. On the Tientsin-Pukow, however, the additional expense will probably not be so noticeable, so probably $31,750,000 will cover all operating expenses in 1917. This is an increase over 1916 of approximately $3,000,000, and reduces the final profits of the year that much below the 1916 figure, which was over $20,000,000. It may be that the increased value of the silver dollar, measured in gold, will largely counteract this increase in operating expenses. The rate of exchange was about twelve per cent more favorable

CHINESE GOVERNMENT RAILWAYS

Conventionalized Map, showing Lines with Surplus and Lines with Deficit after paying all fixed charges for the year 1916

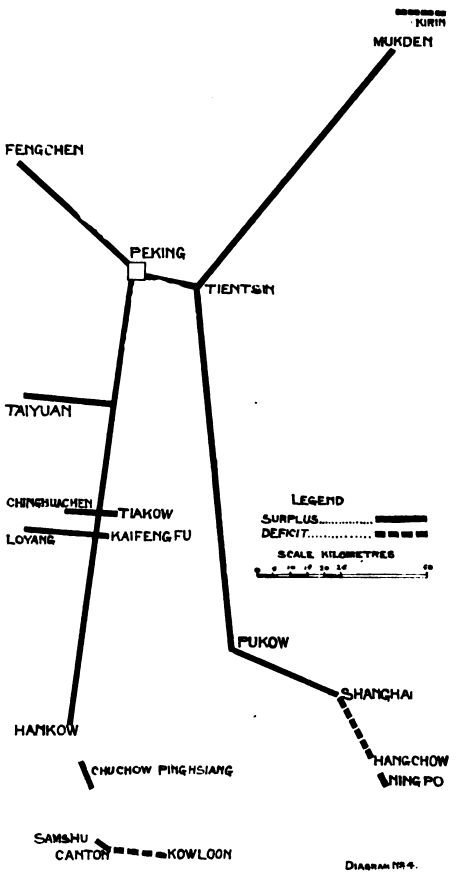


DIAGRAM NO 4.

Lines with a Surplus

Line	*Kiloms.*	*Surplus*
Peking-Hankow	1,316	$10,770,381
Peking-Mukden	965	8,184,449
Tientsin-Pukow	1,107	385,369
Shanghai-Nanking	327	491,444
Peking-Suiyuan	429	1,380,448
Cheng-Tai	243	174,396
Taokow-Chinghua	152	Nominal
Kaifeng-Honan	185	22,953
Chuchow-Pinghsiang	97	51,775
Canton-Samshui	49	388,138
Total	4,870	$21,849,353
Net	4,296	$20,599,375

Lines with a Deficit

Line	*Kiloms.*	*Deficit*
Shanghai-Hangchow-Ningpo	269	$261,076
Kirin-Changchun	130	50,000 (Est.)
Canton-Kowloon	143	787,009
Changchow-Amoy	32	151,893
	574	$1,249,978

in 1917. But even that allowance will probably result in a decrease in "surplus for the year" of about $1,500,000.

In all the computations given above, one factor has been ignored. The revenue figures are not as good as they look. From May 24 to October 16, 1917, silver was required in payment for tickets and the handling of goods to about one third of the charge, on three leading lines. Except for this restriction, notes of the Bank of China and of the Bank of Communications were accepted at par. It is true of course that a considerable portion of wages and salaries were paid in these same notes. But in the case of materials silver was required. For a time, too, Bank of China notes were redeemable at par. But, the net result is that considerable of the revenue has been collected in a unit worth as low as sixty cents at times, while most of the expenses have been paid in a unit worth one hundred cents. How much this factor will reduce the surplus for the year below the figure suggested as probable is very difficult to approximate on these meager data, and these are all that are at hand. Let each reader guess for himself. The pessimists have here a fine opportunity.

Whatever the final profit for the year nets in convertible currency, optimistic Chinese will argue something like this: We are all concerned over the current funds out of which to pay current expenses and obligations, of course. But we are fully as much concerned, and possible investors are more concerned, over the future possibilities of the Chinese Railway System. The normal revenues of the year are the best evidence that can be adduced of the hold which the railways have obtained, of the material progress of the communities they serve, and of the appreciation on the part of farmers and tradesmen of the service that the railways can render them. The way 1917 started out, a revenue of $68,000,000 would certainly have been earned if misfortune had not overtaken us. There is abundant evidence that Chinese producers are learning rapidly that the regularity, certainty, and speed of railway service is a source of profit to them. Results on the Tientsin-Pukow and the Shanghai-Nanking give assurance that lines needed for military security and political unity can be made a success commercially, and the success of the railway is not the only success. To whatever extent a railway is used, to that extent the users are benefited. If they did not profit, they would cease to patronize the line. So this increasing use of the railroad indicates an increasing well-being of the people in the territory served. That is the most valuable result of all.

Extensions Impeded

So much for operation. There are other phases of railway activity which call for attention. What of plans for extending the system? There are a great many of these, several that have been entered upon seriously. The world war has entirely suspended some and impeded all. The kilometrage of the lines entering the computations above has remained practically the same during the year.

A short branch of the Peking-Mukden to Peitaiho Beach was completed this year. While a great convenience to that summer community, it does not carry sufficient business to affect gross revenues perceptibly and only the future can determine its financial value to the line. If property holders should increase rents or the price of vacant lots very materially, the growth of the colony will probably be so retarded that the railway receipts will not pay for the service rendered.

Two important pieces of track have been added during the year to the traffic bearing lines. One of these was that section of the Canton-Hankow line between Wuchang and Yochow—225 kilometers—on June 19. By the following August construction trains could run to Changsha,—145 kilometers farther, or 370 in all. This is the British section of the lines provided for in the Four-Nation Agreement. The German section, comprising a line from Hankow to Ichang has experienced a change of plan. Although surveyed through, it has been decided to build only to Yangjarhou,—at least for the immediate future. Between Dzotse and Yangjarhou, 166 kilometers, surveying is completed, most of the land needed has been purchased, and 133 kilometers have been graded. Of bridge work, 3,633 fongs have been completed, leaving 850 fongs yet to do. Work has ceased on this line only because funds for rails are on deposit in Germany, and the materials cannot be obtained. Nothing has been done on the American section, from Ichang westward, beyond surveying.

The Szechang Railway in Manchuria has been completed from Szebingchian to Santsiankwo. Traffic will move shortly, and the remaining section to Dzenchianton, will probably be finished during the coming months. This line will act as a branch line to the Chinese Eastern Railway, and is about one hundred kilometers long. It was built out of a loan from Japanese sources.

The most active work during 1917 toward new construction was under the direction of the Siems-Carey Railway and Canal Company. But the proposed line from Chuchow to Chinchow, through the provinces of Hunan and Kwangsi, in South China, seems now to be a doubtful eventuality. French protests, based upon a letter from some former cabinet officer, promising protection to the Yunnan line caused, it is said, the interruption of the preliminary survey about the middle of the year. How much these protests were assisted by an impression that the proposed line would be unprofitable, only those who made the decision can say. A considerable portion of the line is in agricultural territory, and until capital could be induced to develop the coal, iron, zinc, copper, and antimony resources of Hunan, agricultural products and supplies would be the chief traffic of the line. This is an evidence of the value of the Tientsin-Pukow results to the future program of construction.

Surveys Made

Reconnaisance and preliminary survey has been made from Singyangchow to Soohoo on a line that ultimately is expected to run to Chengtu. Financial arrangements, which were a source of anxiety at one time, have now been satisfactorily consummated, and the work on this line will recommence soon. This line also has been the subject of protest by the British on the basis of their claimed "sphere of influence" in the Yangtze valley.

Evidently the Chinese Government regards these protests as merely formal. And the assumption is probably correct that "spheres of influence" are fading out rapidly. The Ishii-Lansing agreement has secured a guarantee of the "Open Door" and the "Territorial Integrity" of China from the only nation that was in a position to endanger them. The recent statement of Allied War aims by President Wilson and confirmed by Lloyd George and the French Prime Minister, is an assurance to "weaker peoples" of an opportunity to work out their economic as well as their political destinies undisturbed. What better repudiation of the "sphere of influence" can China ask? If she can demonstrate her ability to keep internal order her delegates can go to the general peace conference with the assumption that so much has been granted. Either that, or prospective railway builders, when shown the map of the eighteen provinces, will repeat the question charged to one of them, "Where the hell is China?"

Report has it that a party of Japanese engineers just before the end of the year set out from Tsingtao to make a reconnaisance of a line from Tsinanfu westward, to a connection with the Taokow-Chinghua line. This project will bear watching. There are visible indications that the Shantung Railway is not very prosperous. If the Chinese Government could be brought to guarantee the interest on a line west from Tsinan, the result would be a feeder to the Shantung Railway without cost to it. If this extension connected with the Taokow-Chinghua line, it would be directly competitive with the Lung Hai for traffic between points on the Peking-Hankow and those on the Tientsin-Pukow. It also would put the splendid harbor at Tsingtao in competition with Shanghai and Tientsin for some forms of traffic from those same points on the Peking-Hankow. The political effects of the proposed extension are not within the scope of this writing.

Through Traffic Difficulties

Besides these items of a material nature, a number of events occurred to perfect the organization. Early in the year a conference was held in Tokyo with representatives of the Japanese National Railways, to improve through passenger arrangements and

to inquire into the feasibility of through billing of goods. Because of likin and other obstacles, this method of handling goods was not considered practicable as yet. At the time of the traffic conference a considerable body of Chinese railway and Ministry officials headed by the then Vice Minister visited the Japanese railways on a tour of observation.

Conferences have also been held between the traffic officials of the several Chinese lines. The most important subject was one fundamental to the operation of the several lines as one national system,—domestic through traffic. Arrangements of this kind have been in effect for some time, but minor adjustments are required from time to time to improve the workings of the system. Interchange of goods wagons freely is fundamentally necessary to gain the largest advantages from through billing. But these wagons in all cases are the property of a given line, the bondholders of which have a certain proprietary interest in them. Car shortage is a chronic condition in China, and each line is reluctant to impair its revenues by permitting its cars to pass on to another line. To insure its prompt return without destroying the economics of interchange is a task requiring much experience and frequent adjustments. Then, too, repairs to wagons not on their home line is a difficult matter. It is complicated by the variations in type of equipment between the different lines. Probably a meeting of the heads of the locomotive departments of the several roads will be necessary ultimately to provide rules to govern. It has been suggested that when the market permits of the purchase of rolling stock, the Ministry of Communications purchase the wagons. In this way uniformity of type may be achieved and the supply of wagons may be distributed between the line as needed.

Probably the most important step in welding the Chinese railroads into a national system was taken when the uniform classification of accounts was prescribed. Toward the end of 1916 it looked as if that achievement had been considerably endangered. The division charged with the enforcement of the classification was reorganized out of existence and its membership scattered throughout other departments. The work on an annual report to cover the Chinese system was suspended, and except for the fact that the several chief accountants loyally followed the new classification, the situation was apparently back to where it was in 1913. In fact some of the sensations which were brought to light through the accounts of one line, rather confirm the suspicion that real accounting was not in good favor at the Ministry. However, the preparation of a report for 1915 was completed, and except for the unfortunate circumstance that the shop to which the printing was intrusted was closed by the police, the report would probably be in circulation by now.

Arrangements have been made for a compilation of the report for 1916. These arrangements have been delayed considerably by uncertainty over the fiscal year. This period was originally fixed to close December 31, but after the death of Yuan Shih-kai the reconvened Parliament fixed the Government fiscal year to end June 30. For purpose of the budget, therefore, the railways were required to use that date. For reasons that need not be stated here, June 30 is a very unsatisfactory date for railway reports. But the immediate effect was to fill the subject of the annual report full of confusion. Some roads followed the expedient of making two six months' reports, and all were delayed considerably. At a conference of the chief accountants held in Peking in November it was decided that if the Government fiscal year could not be changed to end December 31, budget requirements would be met, but that for reporting purposes December 31 would be used as the concluding date. Hereafter, the annual report for the Chinese system should appear more promptly.

The conference of the chief accountants just referred to is the third of its kind since the uniform classification went into effect. Besides deciding the closing date of the fiscal year, this conference made several amendments to the classification as dictated by experience, and cleared up many doubtful interpretations. Plans were made for standardizing the accounts of stations, and a further conference was arranged to be held during the coming spring. A committee of the Ministry has also done considerable work upon a uniform set of administrative rules to govern the routine of accounting. All of these matters aim to solidify the rather loosely jointed national railway system.

So there you have it. Revenues in depreciated currency, large payments uncollected from the military, increased operating expenses, several short lines in the hands of rebellious armies, floods, and pestilence! And there were scandals and other discouraging developments. On the other hand, there is an unmistakable increase in the offerings of traffic. The credit of the system is better assured fundamentally. There is now no doubt of railroads except as there is doubt of China. More and more the means of control have been perfected and the good work of past years preserved. How will you strike the balance? The debit and the credit items are not of the same kind.

China and the Chinese Eastern Railway

Interesting Points Raised by the Entry of Chinese Troops into Harbin

Considerable interest was created in December by the action of the Chinese Government in sending troops into Harbin to maintain order, and in appointing the Governor of Kirin temporarily as director of the Russian section of the railway traversing Chinese soil and known as the Chinese Eastern Railway. By many it was believed that China had exceeded her powers, critics forgetting, of course, that Harbin is on Chinese soil, and that the so-called Russian railway is a Russo-Chinese joint stock enterprise, the agreement in connection with which provides that the director shall be Chinese and the shareholders Russians and Chinese. In appointing a director China merely conformed with a right that has been allowed to lapse since the execution of the Chinese director in 1900.

The call for Chinese intervention at this period was due to the anarchy which developed in Harbin as a result of the activities of the Bolsheviks, and the Chinese earned the thanks of all respectable Harbin residents by the prompt manner in which the troops entered the town, dispersed the Bolshevik soldiers, and restored order. Applause was also accorded China by the various nations interested in the maintenance of peace in this region, and desirous of seeing her take some part in the present war. That China should assert herself so well in a foreign sphere of influence was also regarded as a good augury for the ultimate regeneration of the nation. Hitherto in international matters China has bent the knee rather than straightened it to assert her rights, and the prestige she now gains, little as it is, will, it is hoped, inspire her to move to take her proper place in international counsels.

Her interference was not hurried nor offensive. The steps taken were decided upon with the full concurrence of the Allied Powers, and only after the Russian Legation at Peking had warned the Bolsheviks that their efforts to assume control of the administrative departments at Harbin, particularly those of the Chinese Eastern Railway, violated the provisions of treaties existing between Russia and China, and would precipitate the assumption of authority by Chinese officials and troops. The warning was unheeded, the Bolshevik leaders wired Petrograd for instructions, and when they were ordered to take over the whole administration in Harbin, including the Chinese Eastern Railway, which embraced the dismissal of General Horvath, the manager of the railway, and the heads of other departments, the Chinese officials issued a notification that owing to actions infringing the sovereign rights of China they were compelled to

but it also obligates the company to preserve law and order on the lands assigned to the company by appointing police agents, and instructs the company, for this purpose, to draw up and establish police regulations.

Article 18 of the statutes deals with the functions of the Board of Management, the seals of which are to be at Peking and Petrograd (then St. Petersburg), while Article 19 stipulates that the Board is to consist of nine members elected by the shareholders (shareholders may be of Russian or Chinese nationality only), the chairman to be appointed by the Chinese Government, and the vice chairman to be chosen by the members of the Board from among themselves.

Article 29 deals with the stipulation in the agreement that the railway shall revert to the Chinese eighty years after the opening of traffic, while Article 30 deals with the right of the Chinese Government to acquire the railway on the expiration of thirty-six years from the time of the completion of the whole line and the opening of traffic.

It will be seen from the above that the Chinese were acting completely within their right when they sent troops into Harbin. That city stands within the leased ground of the Chinese Eastern Railway Company (some 29,000 acres), and therefore comes within the scope of the article in the agreement obliging the Chinese to render protection to the railway and its employees. And when China appointed a director of the railway she merely reasserted a right that she had allowed to lapse since 1900. It must be mentioned that the Russian Government at no time attempted to resist this right, the Chinese refraining from appointing a director after the last one was executed on the ground, it is believed, that successors to those who signed the agreement with Russia considered the transaction a blow to Chinese prestige and refusal to fill the post would be regarded as the registration of a passive protest. Before the Russo-Japanese War Russia repeatedly requested that the director be appointed, but without result. At this time the railway consisted of about 1,600 miles of line, extending from Manchuria Station on the northwestern frontier of Manchuria via Harbin to Pogranitchnaia, on the eastern frontier, and southwards to Dalny and Port Arthur from Harbin, via Mukden.

As a result of the Russo-Japanese War (1904-5) and the Portsmouth Peace Treaty (signed September, 1905), all the southern section, except that portion between Harbin and Changchun, was ceded to Japan, which act divided the property over which the Chinese director would have presided, and the cession to Japan raised a point of interest when about two years ago the Chinese Government decided to fill the post left vacant since 1900, and approached the Russian Government with that object. The Russian Government pointed out then that if a director were appointed over their section the Chinese should also appoint one over the Japanese section, a proposal which apparently raised a difficulty in the minds of the Chinese, for the question was not pursued with the Russians. And the point now arises again. With the appointment of the Governor of Kirin as director of the Russian section, the Russian Legation at Peking, while acknowledging the right of China so to act, naturally asks what will be done by China about the section now controlled by Japan. The salary of the director has to come from the Chinese Eastern Railway Company, and since half of the railway is held by Japan, the Russian section will not admit that it has to pay more than half the salary, so to secure the balance China will have to make some adjustment with Japan if she intends to retain her right to the railway directorship. Since both sections are now under different management the only solution naturally is either to appoint two directors or allow the post to lapse entirely. The problem resolves itself into a nice little international nut for the Chinese Government to crack.

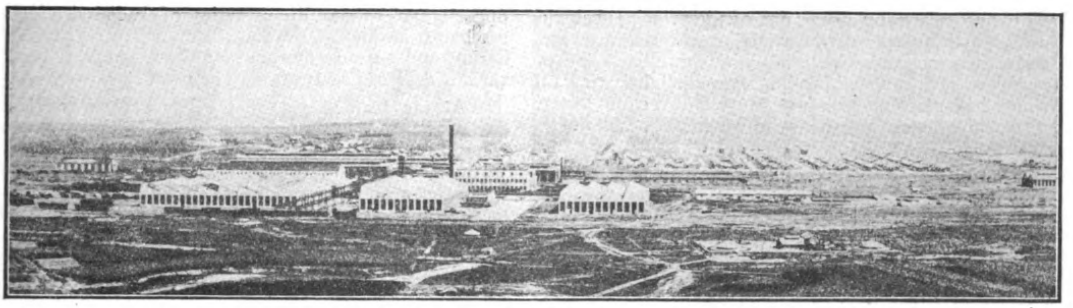
Affairs in Russia having developed as they have done, chaos replacing order and spreading eastwards far enough to menace Chinese territory, there is no reason why the Government should not make some endeavor to take advantage of the clause in the treaty which permits her to acquire the railway after thirty-six years from the date of opening of traffic. This period will expire in another sixteen or eighteen years, ample time in which to allow China to prepare for the purchase if she so desires.

Though China has appointed a director, that does not give her any right to executive control of the line. Such is vested in the Russian Vice President, who resides in Petrograd, and is at present Mr. Wentzel, while the actual executive head at Harbin is General Hovarth, the managing director. He is responsible to the Ministry of Communications in Petrograd (which city is in the hands of the Bolsheviks, and therefore they must control the Ministry of Communications), and he is an opponent of the Bolsheviks. The Chinese, too, have entered into the expropriated area solely in opposition to the Bolsheviks, so future action of the Bolsheviks will be watched with interest, though their influence does not now extend into Siberia. That they will endeavor to exercise jurisdiction is certain, but any step in this direction will no doubt produce serious complications since the Union of Railway Workmen happen to occupy the position of being able to stagnate work on all Russian railways if they decide to oppose any action of the Maximalists, and it can be taken for granted that they will oppose any attempt to make the Siberian railway a Bolshevik service.

Meantime it behooves the Chinese Government to watch closely the development of events on the railway within her own territory, and to enhance the excellent impression caused by her troops and officials immediately after their entry to Harbin. It is her opportunity to get some of her own back, if the Bolsheviks of Russia are foolish enough to continue to give her the opportunity, as they are doing.

A Product of a Railway

If any evidence were needed at this late date to emphasize the great advantages accruing to Chinese territory by the installation of a railway North Manchuria and Harbin could be cited as a clinching argument. Harbin has come into prominence recently by virtue of the turbulence created there by the Russian Bolsheviks, and the measures taken by the Chinese to suppress them. Before the building of the Chinese Eastern Railway this region of Manchuria was practicaly desolate. Where the modern city of Harbin now stands were a few fishermen's huts, set on the banks of a river running through country wind-swept and inhospitable. Now it is a great wheat area, and Harbin is an important city at the junction of the great Siberian railway and the line running south through Mukden to China proper, to Dalny and to Korea. It owes its origin and growth to the Chinese Eastern Railway. Until the vast lands of North Manchuria were put under cultivation and bore abundantly it depended solely upon the railway for its maintenance. Now it is a great grain market and center for industry connected therewith. Its greatest expansion took place beginning with the outbreak of the Russo-Japanese War, since when its rise has been phenomenal. The city itself occupies about 1,400 acres on the right bank of the Sungari River, and consist of three sections.—Old Harbin, New Town, and Wharf District. Before the present war its population, exclusive of the military, was set down at 40,000 while 50,000 to 60,000 Chinese were estimated to live in the suburban native town of Fuchiatien. A population of 100,000 to-day as against a few fishermen but twenty odd years ago! And what of trade developed by the railway? Where there was none two decades ago it ran into figures before the war up to roubles 40,000,000 or more. Even in this year of war the trade passing the Chinese Maritime Customs yielded in tariff dues Taels 1,235,000, an increase over the previous year of Taels 299,000—a total half as much as that derived at the old city of Canton. There are more than ten flour mills at Harbin in which 6,000,000 roubles had been invested by the end of 1917. They then were capable of turning out some 242,000 tons of flour annually. Vodka and beer was also manufactured extensively, and a number of smaller industries are gradually springing up. As a city, Harbin is unique, and before the Russian collapse was a center of great gayety. It possessed fashionable shops, businesses and banks, and is the center of the railway administration, the offices of which are situated in the New Town. The whole region touched by the railway has developed immensely, and the tremendous plains traversed by the trains are all under crops in the season. Before the railway was built the major part of the country was uninhabited where now it supports a thriving population, bearing living witness to the quick response made in China to the expansion of railway installations.



Bird's Eye View of Shakako Workshops and Colony

The South Manchuria Railway Workshops

Details of Modern Car and Locomotive Building Plant at Shakako near Dairen

Originally, the South Manchuria Railway (with the exception of the Mukden-Antung Line) was a part of the Chinese Eastern Railway, and was ceded to Japan by Russia, with the consent of China, at the close of the Russo-Japanese War in 1905. When the South Manchuria Railway Company took over from the Imperial Japanese Government on April 1, 1907, the only workshop they possessed was a temporary building situated within the compound of the Dairen station. This was rendered serviceable for urgent and immediate needs, and small repair shops were erected at Liaoyang, Kungchuling, and Antung. Even at that early period, however, these several shops were barely sufficient to deal with current work, and it was realized that they would soon be inadequate for growing requirements, while new construction work was entirely out of the question. These drawbacks were felt more acutely upon the conversion of the lines to standard gauge, which had been completed on the main line and the Port Arthur, Fushun, and Yingkou branch lines by June 1, 1908.

It was therefore decided to erect at Dairen new and modernly equipped workshops on such a scale as to permit of the centralization of all the mechanical engineering work and repairs and the construction of new locomotives and cars and machinery required by the Company. The site chosen was 400 acres at Shakako, close to the main line, and about four miles from Dairen, the starting-point and headquarters of the Railway. It was a practically uninhabited spot, the only buildings near being a few scattered Chinese farmhouses, and it was therefore decided also to build a model village for the employees. The construction of the Workshops was commenced in 1909 and completed in 1911. The design and lay-out of the Workshops exemplify up-to-date ideas in shop arrangement and equipment, extension of the shops and additional installations of machines being made from time to time to serve new requirements.

Although described as the Railway Workshops, the plant at Shakako is utilized on a much wider basis than the construction and maintenance of locomotives and cars for the Company, for practically all the metal work required by the Company for its railway, tramway, mining, and other businesses is here undertaken, while orders from other railways and concerns are also executed. As regards the rolling stock department, 266 locomotives and 3,400 passenger and freight cars have to be maintained, while each year witnesses the construction of a number of new engines, passenger and freight cars, to supply increasing requirements. About 2,800 workmen are employed, of which 1,250 are Japanese, and the rest Chinese.

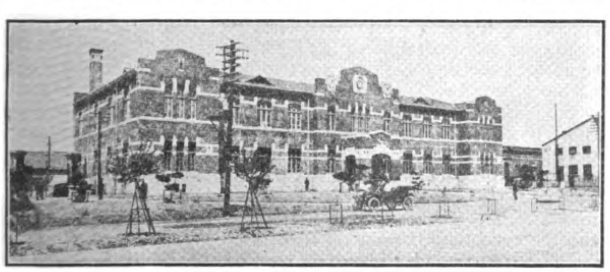
Arranged in parallel lines, the Workshop buildings cover about 16 acres, a further 184 acres being utilized for stacking and storing material, and to provide space for outdoor operations and traffic movements.

The shop plant has been so laid out as to group work of similar character and to provide straight line movement of materials. The buildings are located a sufficient distance apart to allow good natural lighting and are convenient for future extensions.

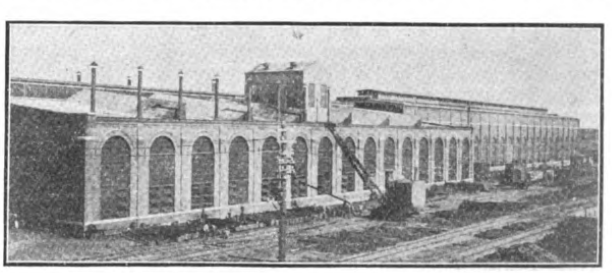
The block comprising the general office, is a two-storied building of brick. On the ground floor, with a wide corridor on one side, are offices for accountants and clerks with a dining room for the staff at one end. On the upper floor are offices and private rooms for the superintendent of the Workshops and his chief assistants. The Draughting room is long and well lighted, accommodating about 50 draughtsmen and tracers. It has a studio for photo printing and photography.

The various offices are equipped with telephones, are electrically lighted and steam heated, while the drawing office is illuminated by indirect lighting from five 2,000 candle-power lamps.

To the north of the general office is the Testing House, a steel skeleton structure with steel roof trusses covered with a double thickness of corrugated galvanized sheet iron. It is well



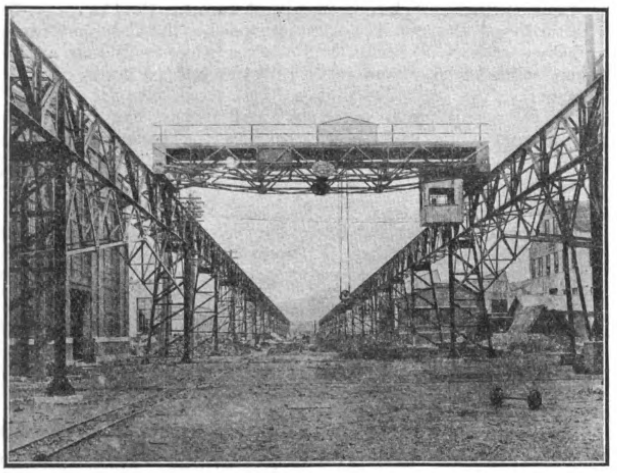
Main Office, Shakako Workshops



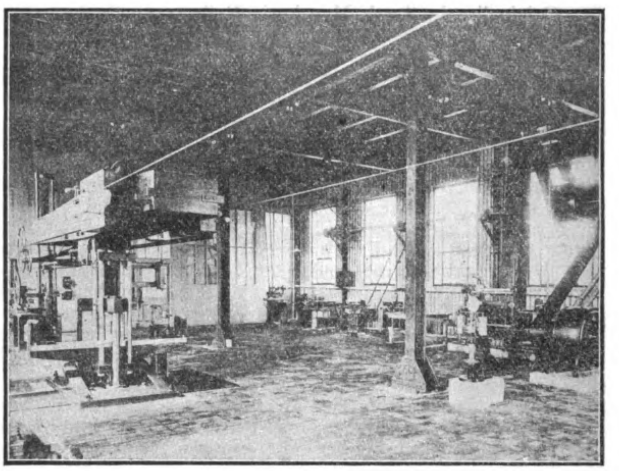
Boiler Shop

provided with appropriate appliances, one of the principal being a 100-ton Buckton hydraulically driven single lever testing machine. All steel and other materials are tested in this machine. There are other machines such as metal bending, torsion, lubricating oil testing, Brinnel ball machine, pressure gauge and vacuum tester, file testing machine, etc., together with numerous automatic recording instruments.

The Boiler Shop is a building 118 feet wide and 300 feet long. It contains two bays, the main bay, 66 feet in span, forming a continuation of the Locomotive Erecting Shop, and is mainly reserved for erecting boilers, being equipped with a 30-ton traveling crane. In the middle section of the other bay there is a rivcting tower provided with a 30-ton crane which will suspend a standard boiler on end, so that the hydraulic riveter can work upon almost any part. There are also three portable hydraulic riveters working on swing arms. Along the roof columns, between the two bays are drilling machines, radial arm drills, boiler tube and sheet drilling machines. At the opposite end of the shop are a plate edge planer, vertical and horizontal plate bending rolls, boiler shell drill, also shearing and punching machines. Here also is a hydraulic press by which tube plates, throat plates, fire-box sheets, etc., are pressed and flanged to shape, a plate heating furnace completing the equipment. The hydraulic accumulator is located close to the wall, supplying water pressure



Yard Crane



Testing Laboratory

at 1,500 lbs. per sq. in. The pump for this is driven by an electric motor. Oxy-acetylene and electric processes are also utilized in this shop for cutting and welding steel plates. The Engine-Erecting and Machine Shops comprise a building of steel skeleton structure inclosed in brick walls, 444 feet long and 190 feet wide, with three bays. The right-hand bay of 70 feet span is a continuation of the main bay of the Boiler Shop and is provided with 22 tracks and pits. One 100-ton and two 30-ton over-head traveling cranes are installed in this bay. An engine is brought in to the farthest end track from the turntable placed outside the shop, the complete engine is lifted up by the 100-ton crane, and then carried over to the desired position on one of the tracks. A hydraulic bushing press and portable cylinder boring and valve seat facing tools worked by pneumatic power are provided in this shop. The center and left-hand bays of the building are the machine and fitting shops, each bay being served by one 10-ton overhead crane. The shop shaftings are all operated by electric motors, while many machines are directly driven by motors, the current being supplied from the Works Power Station. Numerous wall cranes in this and other shops are worked by electric or pneumatic power. On entering the shop from the Boiler Makers' department, a large planer by the Cincinnati Planer Co., and a cylinder boring machine by the Niles Bement-Pond Co., adapted for boring cylinder and piston valve liners simultaneously, attract special attention. On the opposite side there are a series of radial drilling and planing machines installed. Beyond them surface-grinding machines, boring and turning machines, millers, shapers, and slotters of various designs and types may be noted.

At the farther end of the bay are several big lathes for engine and car wheels and axles, a 300-ton hydraulic wheel press being installed near by. The left-hand bay contains one big vertical boring mill of the Betts Machine Co., and numerous lathes, a group of millers and shapers, and several special machines, by various makers. On the left-hand side of the bay is the tool shop and store. Here are several grinders and an electric annealing and tempering furnace. Drills, cutters, gauges, and the like are here constructed. Near the entrance of the shop are a group of fitters' benches. The galleries running alongside the shop wall contain turret lathes and numerous small lathes, with a group of automatic machines, including automatic stay bolt screwing and drilling machines.

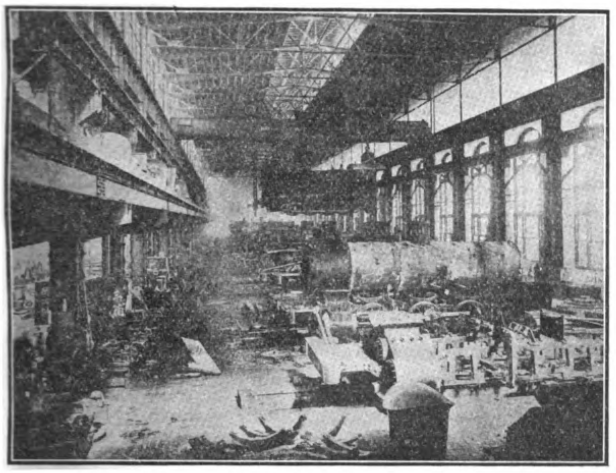
Smithy and Forge Shop

The Smith and Forge Shop, which is 60 feet west of the Boiler Shop and 80 feet south of the Machine Shop, is 360 ft. long and 120 ft. wide, constructed on the same lines as the Machine Shop. At the east corner of the shop are two scrap-ron heating furnaces each with a Babcock and Wilcock water tube boiler mounted on top. Here are 10 assorted hammers, including a 60-cwt. steam hammer by The Thwaites Brothers, Ltd., England, a 50-cwt. Brett's patent drop, and a 20 cwt. pneumatic power hammer. At the end of the shop is a 150-ton hydraulic forging press, by which car fittings and other details are pressed to shape, served by a coke fired furnace placed near by.

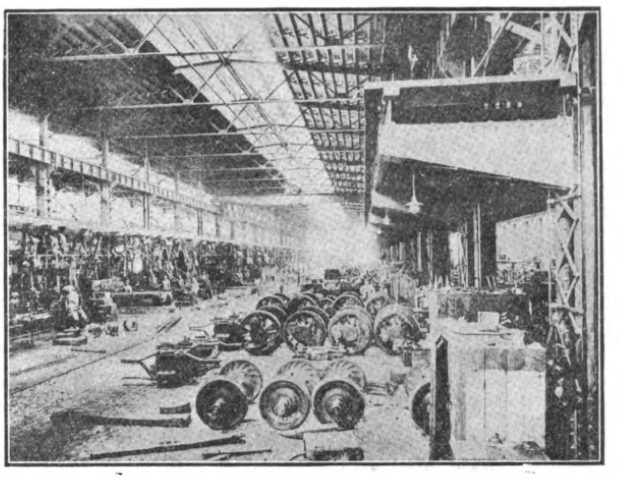
A big punching and shearing machine, motor driven, is supplied for cutting material and scrap metals, and can shear up to ½ inch materials.

A part of the west side of the shop is appropriated for the spring section. Among its machines are those for testing, tapering spring plates and bars, shearing, slotting, and nibbling, together with a hydraulic spring buckle press. Along the center columns of the shop building are two bolt and rivet head making machines, one by The Ajax Manufacturing Co., and the other by the National Machinery Co., and one nut forging machine all driven by electric power. Among other appliances is a battery of steam drop stamps, consisting of two 16-cwt. and one 8-cwt. heads, by which mainly standard car fittings are stamped to shape. The west corner of the shop is occupied by copper and tube smithies. The furnaces in this shop are heated by coal or coke with the exception of some oil furnaces.

The Iron Foundry is 60 feet west of the Smith Shop, and is a building, 260 feet long and 120 feet wide, of steel covered with



ENGINE ERECTING SHOP



MACHINE SHOP

a double thickness of corrugated galvanized sheet iron. The center bay of the Foundry is served by two overhead traveling cranes, one of 15-ton and the other of 10-ton capacity, and each side bay by one 2-ton overhead traveler, all operated eletrically. At the west side bay are three cupolas, one of 7-ton and two of 5-ton capacity, so placed that they may be charged from one charging floor, the blast being supplied by two Root's blowers driven by electric motor. An electric runway of one ton capacity conveys pig iron and coke to the charging floor. At the corner of the shop is a series of loam mills, sand riddler, and centrifugal sand mixing machine driven by electric power. The opposite bay contains a core room and drying ovens. Freight car cast-iron wheels 33 inches in diameter are made in this shop, a portion of the floor in one of the side bays being reserved for the special chill moulds for wheels.

Brass and Steel Foundries

The Brass Foundry, 120 feet long by 60 feet wide, and the Steel Foundry, 120 feet long and 90 feet wide, are arranged in a series with the Iron Foundry. In the Brass Foundry are installed one Radio (3-140 lbs.) and one 400-lbs, tilting brass melting furnace, each attached with motor driven fan, being served with a one-ton hand operating jib crane. Pneumatic moulding machines are used for all repetition work. The Steel Foundry is a quite new addition to the plant, and is equipped with one 3-ton preheating cupola and one 1-ton Kaneko's Patent Baby Converter, the former being served by a Root's blower and the latter by a Turbo blower driven by a 60 horse power electric motor.

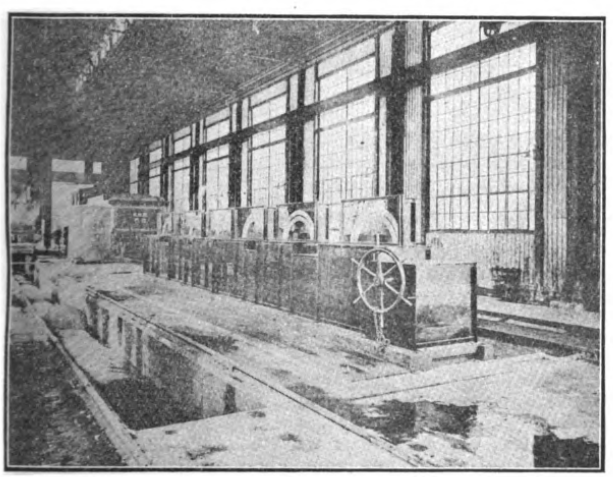
The Pattern Shop is adjacent to the Iron Foundry and is a three-storied building, 160 by 40 feet wide, of steel covered with galvanized sheet. A section of the ground floor is used as a casting bed of brake blocks and other light castings for engines and cars. The rest of the floor space is reserved for storage of materials and patterns of large size, the office also occupying a part of the space.

The second floor is the pattern-making shop. It is well equipped with labor-saving appliances, among which circular and band sawing machines, planing machine, fret saw, wood trimmer, turning lathes, etc., may be noted. A dust-collecting plant is also installed on this floor, shavings and sawdust being automatically removed. The whole space of the third floor is for storage of patterns. An automatic sprinkler system is provided.

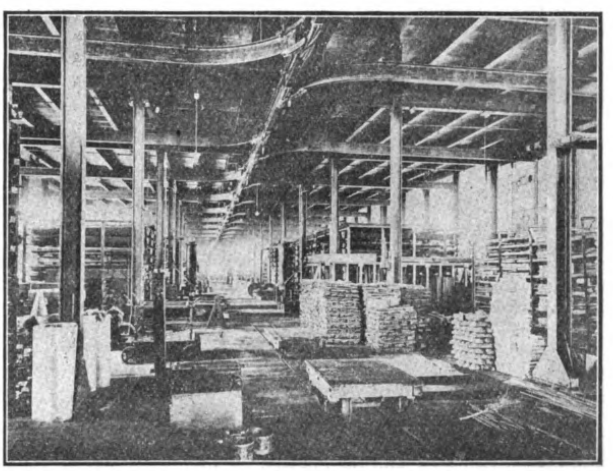
The General Store is situated at the center of the general shop plant, between the Locomotive and Car departments. The building is of two stories, 300 feet long by 60 feet wide, covering a ground area of 18,000 sq. feet, and is provided on both sides of the building with storage and unloading platforms 15 feet wide.

The Oil Store is a small fire-proof building 30 feet long and 24 feet wide, isolated from the general store house.

The Car Department truck shop is situated parallel to the General Store 110 ft. to the west and all shops belonging to the Car Department, are steel skeleton structures with steel roof trusses, covered with a double thickness of corrugated galvanized sheet iron, the air space containing a layer of bituminous hair felting to



ENGINE WEIGHING SHOP



GENERAL STORE HOUSE

render the buildings cold proof. Though called the truck shop, air brake, steam heating system, brass works, and all other passenger and freight car fittings are also repaired and manufactured here. It is in five bays, 320 feet long and 120 feet wide, the two intermediate bays each being served by one 5-ton overhead traveling crane. One corner of this shop is partitioned off for brake repair work, and provided with two test racks for testing air brake triple valves. An electric plating and oxydizing room is adjacent. Along the eastern bay are polishing machines, screw threading machines, groups of lathes and drilling machines, two car wheel boring mills and two wheel lathes. On one side of the center bay are two center grip car wheel lathes and one double axle lathe motor driven. One motor-driven hydraulic wheel press working at a total pressure up to 200 tons and an oil-burning tire heating furnace are accommodated with a 5-ton jib crane. A pneumatic power hammer is used for fastening the tires, vice benches near to the end of the bay, where all pipe work connected with brake and heating system and other miscellaneous fitting and furnishing are mainly done. Here are one pipe threading machine and one punch and shearing machine.

Saw Mill and Freight Car Shop

The Saw Mill and Freight Car Shop is 320 feet long and 220 feet wide. A noticeable feature of the shop is the provision for ample natural lighting. Light from wall windows is supplemented by saw teeth skylights. The Saw Mill is in two bays, one 40 feet and the other 20 feet wide. The 40-foot bay has one track in the center and is served by a 5-ton electrically driven overhead traveling crane. Outside the north end of the saw mill is the timber yard. At the yard end of the shop are two horizontal log band sawing machines supplied by Messrs. Thos. Robinson & Son, Ltd., of England. These machines deal with logs up to 36 inches by 40 inches, each being driven by a 40 horse power motor fixed to the shaft carrying the saw pulley. Beyond the band saws is a 3 foot traversing cross cut saw bench. The circular rack saw bench, carrying a saw up to 40 inch diameter, used for cutting deals, is driven by a 40 horse power motor. There are other machines, including circular saw benches, band sawing machine, planing and matching machine, hollow chisel mortisers, panel planer, double ended tenoning machine, vertical tenoning machine, multiple boring machines, etc. The planing and matching machine, or four side planer, has a capacity up to 15 inches by 6 inches. The multiple boring machine carrying six spindles can bore up to 4 inches in diameter in timber up to 16 inches square.

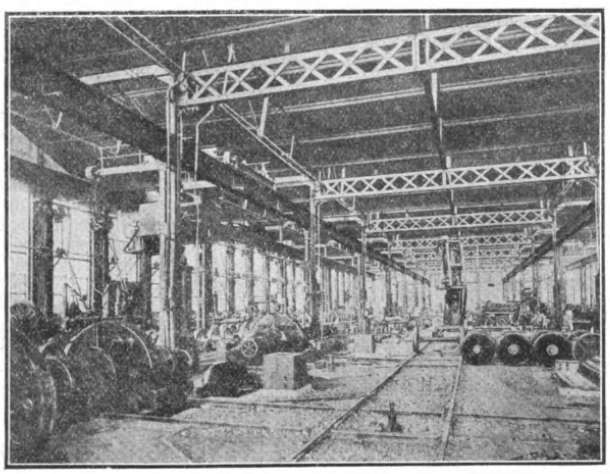
Longitudinal sills, end sills, cross beams, etc., after being planed, are fed through the tenoning, boring, and mortising machines in sequence, and then passed forward to the car building shop.

The Freight Car Shop consists of four 40-foot bays, each bay being served by one 10-ton overhead traveling crane. There are eight tracks in this shop, arranged with 20 feet space between centers, having room for 64 standard cars. The construction of new freight cars and heavy repair work are principally carried out in this shop, ample space on yard tracks being provided for light repair of freight cars.

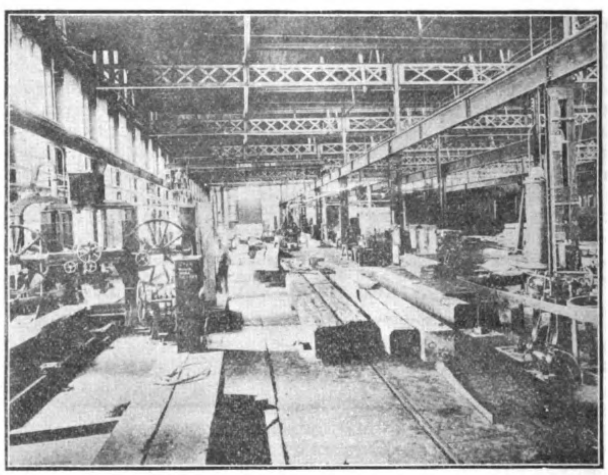
Passenger Car Shop

The Passenger Car Shop is a lofty and airy shop, 282 feet 6 inches long by 160 feet wide, built in practically the same style as the Freight Car Shop, and having three bays. The eastern part of the shop is allotted to cabinet work, and here is found a group of modern machinery for dealing with all interior and decorative woodwork of passenger car building. It contains circular and band saws, planing, boring, tenoning, mortising, scraping, moulding, and sand-papering machines, together with wood-turning lathes. The veneer shop occupies one corner of this building and is partitioned off from other departments. It contains several veneer presses and a special steam-heated press for quickly applying and drying veneer.

The western part of the shop is provided with nine tracks arranged crosswise to the bays, each being served with one 30-ton overhead traveling crane. As a rule, each track receives two cars of the standard size, the overhead cranes being used to lift the car body in case of removing the trucks.



Car Truck Shop



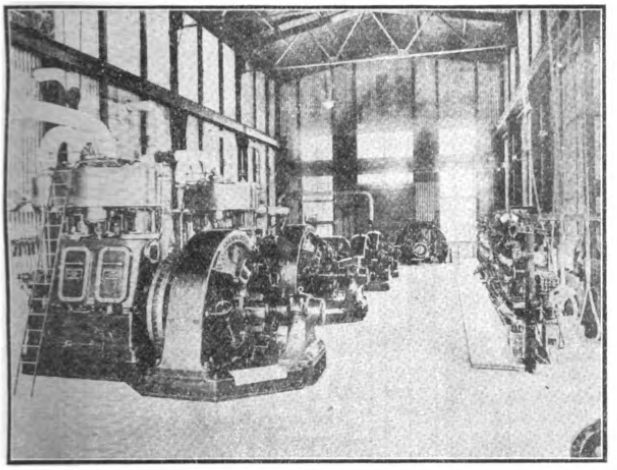
Wood Working Shop

The Paint Shop is south of the Passenger Car Shop, and is separated from the latter by an electric traverser. This building is 282 feet long by 160 feet wide, the roof columns dividing it into four longitudinal bays. Satisfactory diffusion of light is obtained from saw-teeth skylights. It contains 10 tracks spaced on 20 feet centers, each track having a capacity of 2 cars.

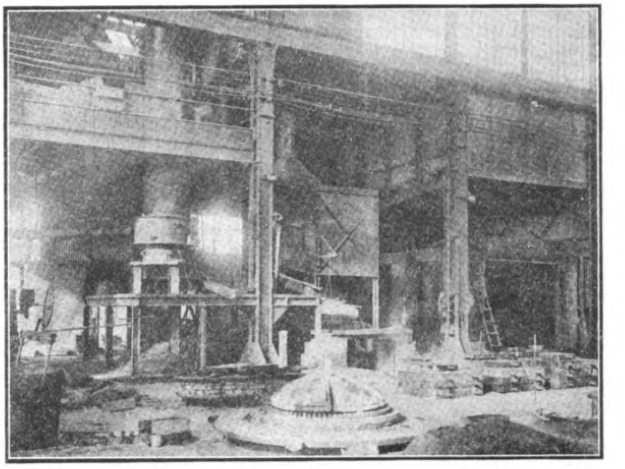
One line is always reserved for the special cars of the Company, so that they may go out in service at short notice.

Electric Power Station

The Power Station is situated between the Passenger Car Shop and the Iron Foundry, opposite the Truck Shop. It supplies all power required on the works. The building is 100 feet long by 95 feet wide, and is made in two bays. One bay, 55 feet wide, is for the boiler room, which is partitioned off from the engine room. The boiler plant consists of three batteries of water tube boilers with integral superheaters supplied by Messrs. Babcock & Wilcock, Ltd., London, each boiler being fitted with the chain grate stoker of the makers' patent. Five groups of Greens' patent fuel economizer are fitted in the main smoke flue leading to the chimney, in a position between the boiler batteries and the partition wall. There are three "Weir" vertical direct



ELECTRIC POWER HOUSE

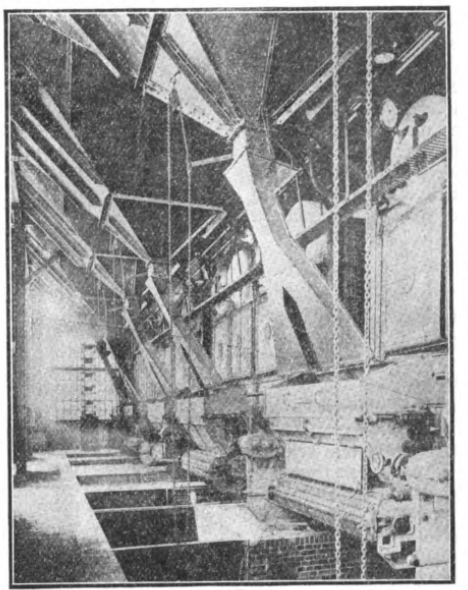


STEEL FOUNDRY

acting pumps used for feeding boilers. The chimney for the boiler plant is of the self-supported type, built of steel plates, standing upon a brick work base. It is 157 feet high.

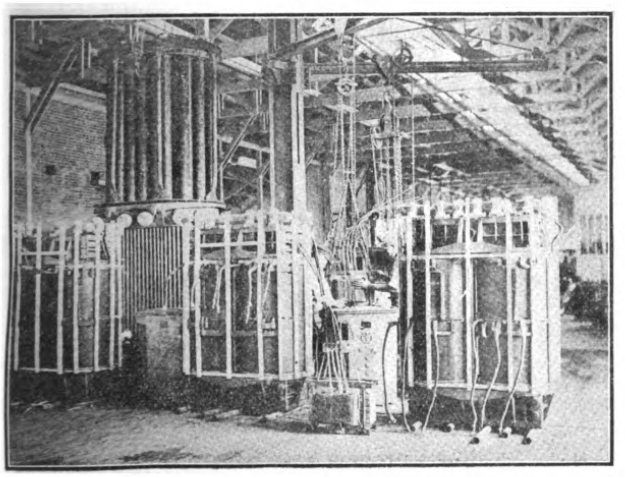
The coal unloaded from cars drops into a receiving hopper and passes through a simplex valve into the automatic filler and fills the buckets of the endless chain bucket coal conveyers. It is then dumped from them into any of the six overhead coal bunkers in the boiler plant, from whence it is fed to the coal receiver for each grate by the working of a pull chain. The ashes are raked to the front of the boilers, shoveled through the openings in the foot plating into the buckets as they pass the ash trench, and are raised and dumped into the ash bunker outside the boiler plant.

The engine room is 40 feet wide and 100 feet long, and provided with one 8-ton overhead traveling crane. There are two sets of steam engines directly coupled to 400 kilowatt dynamos, two sets of 250 kilowatt motor generators, two air compressing engines, and one fire service pump. The dynamo driving engines of Messrs. Bellis & Morcom, Ltd., construction, are compound two-crank two-cylinder vertical inclosed self-lubricating high-speed non-condensing type capable of giving an output of 570 B.H.P.

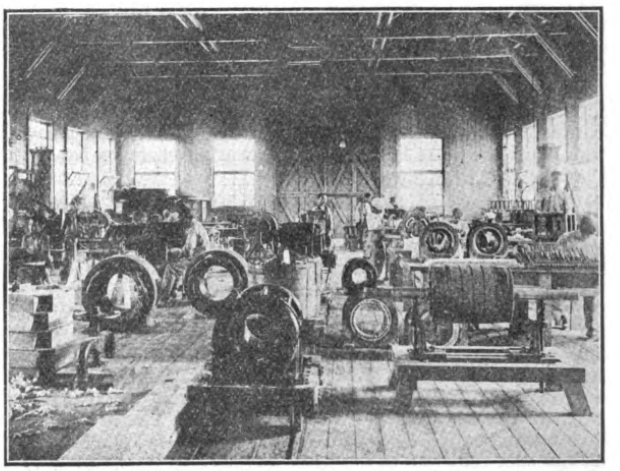


BOILER ROOM

The dynamos were supplied by Messrs. Dick, Kerr & Co., Ltd., and are compound wound direct current type, capable of giving an output of 400 kilowatts at 250 volts. The motor generator sets were manufactured by the Shibaura Engineering Works, Japan. Each set of these generators consists of one 370 B.H.P., 200 volt, three phase, 25 cycle induction motor, coupled to two 125 kilowatt 250 volt compound wound direct currency dynamos, at each end of the same shaft. They receive the current from the central electric station at Dairen, and one or two of these 250 kilowatt motor generators is operated to supplement the workshop power. The switch boards fitted along the west wall of the engine room consist of 23 panels



ASSEMBLING TRANSFORMERS IN THE ELECTRICAL DEPARTMENT



WINDING OF MOTORS

for different sections, adequately and completely equipped in accordance with the most modern practice.

The air-compressing engines were manufactured by the Ingersoll Rand Co. They are of the duplex compound steam and compound air non-condensing type with intercooler, each capable of compressing air to 100 lbs. per square inch pressure at 80 to 100 lbs. per sq. inch pressure of steam. When running at 120 revolutions per minute, each engine has a piston displacement capacity of 925 cubic feet of free air per minute, with terminal air pressure of 100 lbs. per sq. inch, developing about 157 I.H.P. in its steam cylinders. The boilers generate steam sufficient to cover the supplies to the steam engines, steam hammers in the Smith Shop, and some 325 "Stanlock" heaters distributed in the shop building. The supply pipings for steam, compressed air, and automatic sprinkler system are carried in an underground closed main duct and branched off to the several buildings.

The Locomotive Weighing and Preparation Shed is situated at the northeast portion of the lay-out, 417 feet distant from the center of the Turntable. It is 42 feet wide and 160 feet long, and is equipped with a 12 tabled engine-weighing machine made by Messrs. W. & T. Avery & Co., Ltd., England.

Water Supply

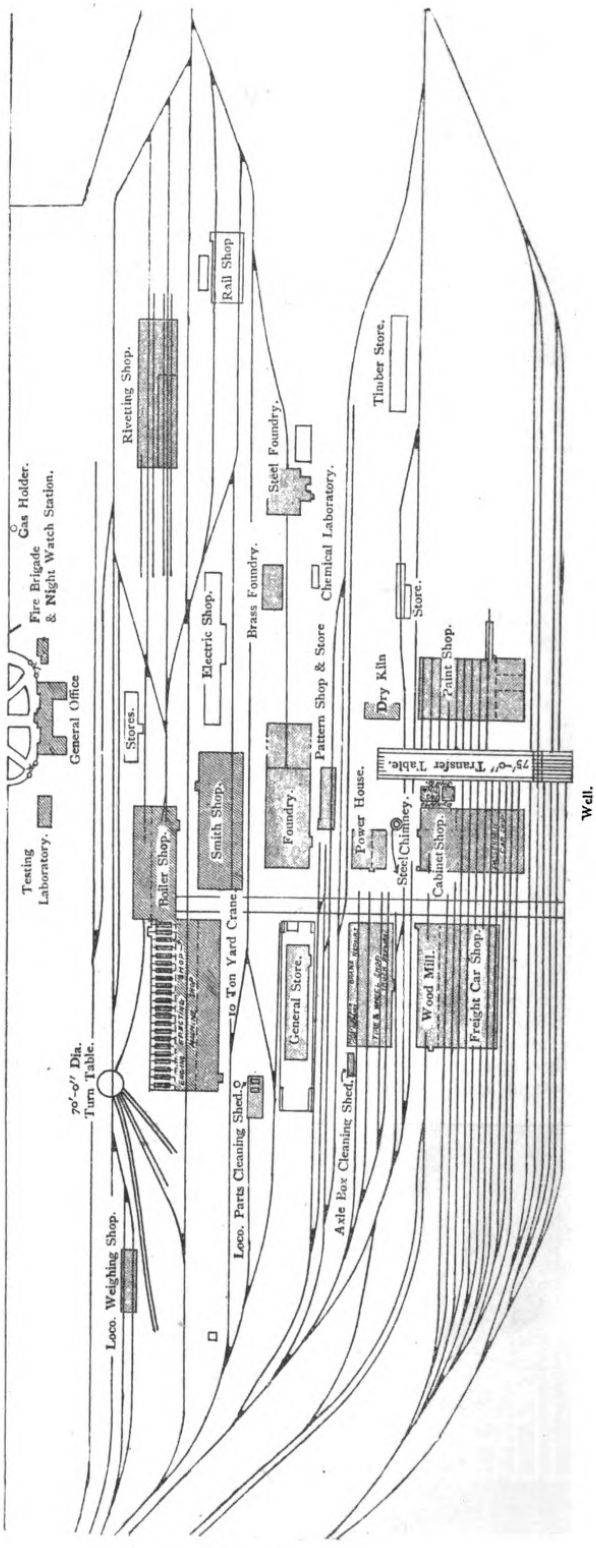
The supply of water to the Workshops and Colony is executed by an independent water works. The water sources consist of a number of wells sunk in the vicinity of the premises, from 20 to 30 feet in diameter and from 25 to 42 feet deep. The Pumping Station is situated at a distance of about 700 feet southwest of the Paint Shop. Its equipment includes two sets of Rees Roturbo pumps, each directly coupled to a 60 B.H.P. 3-phase A.C. motor, and capable of delivering a maximum quantity of 400 gallons of water per minute, against a maximum total head of 275 feet.

Sewage System

Waste water from the Workshops and Colony are discharged through glazed earthenware pipes, ranging from 4 inches to 18 inches in diameter, and are collected in a series of manholes connected by a main drain 24 inches in diameter, discharging into the Sewage System located along the eastern boundary of the Works enclosure.

It may be interesting to explain the Sewage System briefly. It is designed to treat an average dry weather flow of 150,000 gallons per day. The sewage is first admitted from the sewer into the screening chamber, which is fitted with a wrought-iron screen. Foreign and insoluble matter is arrested here, the sewage being allowed to pass over into the detritus tank, where the screened sewage is allowed to settle. The effluent then passes to a distributing channel which runs at the back of the septic tank and is connected thereto by means of submerged inlets regulated by disc valves. These septic tanks consist of eight sections, each 25 ft. long by 20 ft. wide with an average depth of 6½ ft. The floors are made sloping for the more convenient removal of the sludge, which can be valved off to the sludge tank. The tanks are covered with a galvanized sheet iron roof, and kept secluded from light and atmosphere. The effluent from the septic tanks is fed into a measuring chamber having a liquid capacity of 3,200 gallons.

The contents of the measuring chamber are held up by means of the Mather & Platt patent automatic valve until the above capacity is reached, when discharge takes place. From the measuring chamber the sewage is conveyed by means of a 5-in. cast-iron pipe to the filter bed. The bed is 50 ft. in diameter and 6 ft. high, and constructed of graded gravel and coal, with large-sized coal lumps as an outside wall, the whole being piled upon a sloping floor of concrete. The sewage is distributed over the surface of this filter bed by means of automatic rotating spreaders, which are driven round by the action of the sewage in issuing from them. The bed effluent flows by gravitation to graded concrete channels round the bed and is thence conveyed to the River Baranka by means of a 17" diameter mortar pipe.



GROUND PLAN OF WORKSHOPS

The money was not transferred immediately on the completion of the loan owing to the adverse rate of exchange, but was kept on deposit in the banks in Japan for some time. The greater part of it was earmarked for the reorganization of the branches of the Bank in South and Central China.

Another Sino-Japanese transaction, which at the time was wrongly called a loan, was the formation of an exchange Bank projected by Mr. Lu, former Chinese Minister at Tokyo. The capital was fixed at Yen 10,000,000. The Company was registered in China according to Chinese law and most of the big banks in Japan are interested in the Japanese half of the capital. There are two managing directors, one Chinese and one Japanese, the President being Chinese.

On October 12, 1917, the revised Kirin-Changchun Railway Loan agreement was also signed at the Board of Communications, Peking, Mr. R. Tatsui (Director of the South Manchuria Railway Company) representing the Japanese interests, and Mr. Chien-liang and Mr. Liu Meng-hsiang the Chinese Government, The chief features of that Agreement are as follow:

a) Amount of Loan, Yen 6,500,000:

From the above amount, about Yen 1,980,000, being the unpaid balance of the original loan of Yen 2,150,000, as advanced by the S. M. R. Co. on August 18, 1909, shall be subtracted, and the remaining amount of about Yen 4,510,000 shall be delivered to the Peking Government.

b) Interest: 5% per annum.

c) Net amount: Yen 91.50 per Yen 100.

d) Term: Thirty years.

e) Security: Properties and receipts of Kirin-Changchun Railway.

f) Managemet: Control of the Railway is held by the Peking Government. During the term of the Loan, the S. M. R. Co. shall assume the management of the Line on behalf of the Peking Government in consideration of the net profit of 20%.

g) Chief Officials and Scope of Authority: The Peking Government shall appoint a Director to supervise the general affairs of the Railway.

The S. M. R. Co. shall select the Chief Engineer, Traffic Manager, and Chief Accountant, one of whom shall be nominated the Company's Representative and shall attend to the exercise of the Company's rights and the fulfillment of its obligations within the bounds of the Agreement.

With regard to matters of importance, the Company's Representative and the two other officials above mentioned shall consult the Director beforehand.

h) Through Service with the S. M. R. Co., etc.:

With regard to the through traffic service with the S. M. R. Lines, the joint use of the Railway Station at Changchun, and the completion of the improvement of the Lines, an agreement shall be concluded separately.

A Railroad Route into Szechwan

In a previous issue of the FAR EASTERN REVIEW we announced that the surveyors connected with the Siems-Carey Railway and Canal Company had found a feasible railway route over the hitherto almost impassable Tapashan mountains into the rich province of Szechwan. Further investigation indicates that it is possible to construct a railway, via the valley of the Han River to Tzeyang, thence up the Jen-ho River, across the Tapashan mountains, down the Tungkiang River, and westwards to Chengtu, the capital of Szechwan, with a maximum grade of one per cent. How important this is can only be grasped by those who realize how wonderfully rich the great province of Szechwan is, and how great are the difficulties to be overcome to reach it. The turbulent Yangtze, with its tremendous rapids, is the main means of ingress and egress. Dangerous at all times, and impassable at some stages, this river is a terror to all engaged in commerce, yet it has proved a boon, for the province is ringed in by great mountains over which nothing but a trail passable by coolies or pack animals has hitherto been possible. Virtually Szechwan has practically been isolated. Its great population has been able to thrive because its resources are so rich and varied as to make it self-contained. Great as the commerce is, comparatively speaking, which has developed during recent years, it has grown in spite of the grave natural difficulties confronting the enterprising people engaged in it. What it will expand to with a railway connecting it with deep water cannot even be estimated. Statisticians might juggle with some big figures. Its area is some 218,533 square miles, and its population is estimated to be some 70,000,000. Its area is bigger than France, bigger than Germany, nearly twice as big as the United Kingdom, and its population is larger than that of Germany, nearly twice that of France, and fourteen times larger than that of Australia. The Szechwanese are industrious to a man. Every arable inch is cultivated. In the mountainous region through which the feasible line has been found the mountains were under cultivation—terraced to their tops. One of the surveyors found a man plowing, with two bullocks to the plow, at an elevation of 8,000 feet in a veritable sea of mountains. Corn was found to be planted in the crannies of cliffs—a task for an Alpinist to harvest the slender crop. Down on the great plain, where centuries ago native engineers established an irrigation system, marvelous in its efficiency the population teems and lives in abundance. In the region known as the Red Basin the products are numerous. Silk is one of the most valuable exports, the output in 1910 being estimated at over three and a half million taels; white wax, tobacco, tea, wheat, medicines, sugar, rice, indigo, fruits, are produced in great quantities. Of minerals there are rich deposits. Petroleum is believed to be obtainable in great bulk. Salt is a byword. Richthoven estimates that Szechwan has more coal bearing country than the total area of any other province in China. Iron is widely manufactured by crude native methods, while there is conspicuous evidence of copper, silver, tin, gold, lead, zinc, asbestos, etc. And yet this great natural deposit of wealth is served by but one roaring, turbulent river, and one or two difficult roads or trails over vast ranges of mountains. The route discovered by the Americans would traverse new country, far removed from the Yangtze valley, and would thus give not only an additional avenue for trade but one of a modern character, which would bring the remote province in speedy touch with the sea, and from a strategic point of view in practically immediate touch with the capital, Peking. Of all the lines in China that the Government should build and build quickly this one into Szechwan calls loudest for consideration, and of all the provinces of China, Szechwan holds the greatest promise for commercial and industrial development for the immediate benefit of the people.

Where Anglo-American Coöperation Can Avail

In recent months there has been much talk of Anglo-American coöperation, and if those who talk so much about it are really serious they might get their heads together as well as their possessions to give some practical demonstration in China of their ability to construct at least three railways that ought to be built as soon as possible. One is the completion of the line now under construction between Wuchang and the Kwangtung Railway (the Hankow-Canton Railway); another is the completion of the railway between Pukow and Sinyang, and the other is a railway into Szechwan via the Han River valley.

The railway from Wuchang (opposite Hankow) southwards into Kwangtung province, to connect with the Yuet-Han Railway, already operating for some 160 miles or more from Canton, demands immediate attention. The northern section already is operating between Wuchang and Changsha, thus virtually giving Changsha Railway connection with Peking, and—Europe; and the gap between Changsha, or, say, Chuchow (for traffic is possible over the coal line to Pinghsiang) and the railhead of the Canton section ought to be pushed to completion without delay.

Lack of finances is the stumbling block, and money ought surely to be available from America provided proper steps are taken to secure it. Materials at war time prices would make costs of equipment excessive, but the necessary earthwork could be completed with construction material available in China at present—and if the war is not over before the long gap can be embanked, tunnelled, and culverted, Heaven help the world. So far as we can understand the hitch with regard to funds is political; or rather is due to the fact that no serious effort has been made by those concerned to settle some questions which await adjustment.

Money could no doubt be obtained from America if Great Britain would waive the right her nationals have to extend the projected railway from Pukow to Sinyang, on the Peking-Hankow Railway,—in a westerly direction to Siangyang, on the Han River, which suggestion brings us to the second railway calling for construction, viz., one into Szechwan province, up the Han River valley, the right to build which has been granted to the Americans. To make this line commercially possible common sense dictates that it be run from Sinyang, and common sense likewise dictates that matters between the British and the Americans be placed beyond dispute to effect the completion of the line (the third one which ought to be built), which was under construction between Pukow and Sinyang when war broke out. Work on this railway was suspended solely for want of funds, and awaits the termination of the war before the British can even think of resuming operations. If America would find the money to enable this line to be built we would have direct connexion between Shanghai and the capital of Szechwan when the work is completed, via Pukow, Sinyang, Siangyang (on the Han River), Tzeyang, and Shunking. The situation is, therefore, that the British hold the right to build the Pukow-Sinyang section, and the Americans have been given the right to build the line up the Han River valley into Szechwan, and cannot proceed along the logical route from Sinyang to Siangyang because the British hold the right to that section.

On one side the British have the right but not the money, and on the other the Americans have the money but not the right. Surely a beautiful set of circumstances to admit of the fullest play with those apparently earnest coöperative sentiments expressed just recently. The ingredients are money and rights, and the parties possess them between them. If Anglo-American unity, or Anglo-Saxon "get-togetherism" is worth a snap the mixing of those ingredients should produce anything but indigestible international plum duff or humble pie.

The advantages of coöperation in this field are so tremendous that to call attention to their obviousness is tantamount to insulting the intelligence of people familiar with China. Any railway in China will benefit China, and thus will benefit all trade. The British and the Americans want nothing but trade, and if they join in the building of these three lines they should have great opportunities between them.

Coöperation would thus mean the earliest possible construction of a line running north and south through China from Canton to Peking and beyond, and one east and west through China from Shanghai to Chengtu, the capital of China's richest province, as yet virtually isolated. If the people in the provinces through which these railways would run knew what their import is they would go down on their knees night and morning and burn joss paper to the British and Chinese Corporation and the American International Corporation, the financiers for Siems and Carey, praying them to fuse their ideas, their rights, and their money. These great corporations ought to do it anyway if merely to prove that there really is something in this talk of Anglo-American unity. It would be a lesson to the Chinese having a thousand fold advantage.

Philippine Government Expenditure

Theoretically government is for the benefit of the governed, and those in power are suffered only just so long as they prove efficient conservators of the public resources. This democratic theory in these days is being carried out more and more in a practical way in that the welfare of the people now begins to assume a paramount position as a first charge upon the revenues. Judged along these lines, the present administration in the Philippines certainly is to be congratulated for the excellent showing it has made in the recent report of Auditor C. H. French, in which he treats the revenues of the government from an economic standpoint and proves conclusively that the revenues are being expended solely for the benefit of the Filipino people.

The largest single item in the Philippine budget is for aid to local governments, which consists in a large part in the construction of utilities and improvements that will directly benefit the people by improving the conditions under which they live, either in educational, agricultural, and communications improvements such as schoolhouses, irrigation works, roads and bridges. This money will be returned to the government in the increased production of the provinces and their contributions through taxation will in time be dividends on this investment.

Next in order is public education, which absorbed 17.57 per cent of the revenue in 1916, an increase of 1.2 per cent over the preceding year. With education, under the Filipino system, must be classed public corrections, since the penal system in the Philippines is directed solely towards educating the offender away from the misguided or untutored ways which led him into crime. It must be remarked here that a large percentage of the natives of the Philippines were utter savages twenty years ago, and it is not unusual for a murderer to be quite a leader in his community and a force for progress despite his dexterity with the headaxe. This service absorbed 2.8 per cent of the revenues.

For the development of commerce 6.5 per cent was expended principally in road building and opening up country that in a few years will tax the new means of communication to the utmost to move products destined for the world's commerce from what would otherwise have remained waste land. With this item must be considered 2.9 per cent of the revenues that were expended for the development of agriculture, and in this connection it may be noted that more than 3 per cent of the total revenues were for the suppression of animal diseases and plant pests, and service directly connected with agricultural extension.

Conservation of natural resources in the Philippines largely centers in the Bureau of Forestry, since the forests of the Philippines are its only live asset—one which needs only be transported to market to be exchanged for gold. The forests are administered not for the present only, but cutting is so supervised and directed that the holder of a twenty-year concession will leave a forest in a much better condition than he found it, since there will be no superabundance of overripe trees, as is the case in practically every new concession opened.

Publicity work, which in the case of the Philippines means the extension of its commerce and popularization of its products throughout the world, absorbed 1.35 per cent of the revenues, and if the customs returns are any criterion, the money was well spent.

It is interesting to note that a slightly more liberal policy was manifested towards the development of the industrial arts and sciences, in which almost 7/10 of one per cent of the revenues was allotted for that purpose this year as against 1/5 of one per cent last year. This money is expended largely by the Bureau of Science, which has for its work the opening up of exceedingly broad fields in the utilization not only of existing products, with which the world is as yet unfamiliar, but the extension and development of new products in the islands, a duty in which it coöperates with the Bureau of Agriculture. Those who are familiar with the published reports of the Bureau of Science are unanimous in the hope that the government's purse strings will be still looser when the next appropriation bill is under consideration.

Being a tropical country, and surrounded by other countries where sanitation and the prevention of disease either is ignored or not well understood, the Philippines are continually menaced by imported diseases, such as bubonic plague and cholera. It is therefore necessary that a large proportion of the revenues be expended for the protection of health of the people, and during

Freight Cars of S. M. Ry.—The South Manchuria Railway Co. has now 3,100 freight cars including 215 fifty-ton coal cars, the remaining 2,550 cars being of 30 ton capacity. These cars are distributed to the different trade centers in proportion to the volume of business. In order to facilitate the through traffic between the Manchucia and Chosen Lines as a sequel to their recent amalgamation and because of lending cars for use on the Ssupingkai-Chengchiatun Railway, the construction of a great many new goods cars will have to be undertaken. In view of shortage of materials only 100 new goods cars can be built to reinforce the existing service during the current fiscal year. The replenishment program for goods cars will be completed during the next two years.

SHIPPING

Japanese Subsidies Continued.—Notwithstanding efforts on the part of Japanese shipping firms to decline to receive further annual subsidies the Japanese Government is ignoring all applications petitioning the Government to stop to further shipping bounties, and the Department of Communications has ordered the Nippon Yusen Kaisha, the Toyo Kisen Kaisha, and the Osaka Shosen Kaisha, Japan's three largest shipping firms, to receive the bounty. Details of the amount of the bounties and the name of the firms which have been ordered to receive it are:

European service to be maintained by the Nippon Yusen Kaisha semi-monthly with eleven ships, each of more than 5,500 tons and sailing at 14 knots an hour, making 26 round trips a year and for which the Government is ready to subsidize Y.1,689,850 in 1918 and Y.1,569,672 in 1919.

Puget Sound service to be operated by the Osaka Shosen Kaisha bi-monthly with six ships, each of more than 5,500 tons, sailing more than 14 knots an hour, making 26 round trips a year and for which the Government is willing to give Y.2,669,925 in 1918 and Y.2,509,187 in 1919.

San Francisco service to be maintained by the Toyo Kisen Kaisha four-weekly with three steamers each of 12,500 tons and sailing more than 18 knots an hour, making 14 round trips a year. Owing to the fact that this line competes with more than one other foreign line and for that reason the Government has refrained from announcing the exact amount of subsidy.

Pacific South American service line will be operated by the Toyo Kisen Kaisha bi-monthly with three ships, each of more than 6,000 tons, faster than 13 knots an hour, making 6 round trips for which the government will give annual subsidy of Y284,863 in 1918 and Y269,350 in 1919.

Australian service to be operated by the Nippon Yusen Kaisha monthly with three ships, each of more than 5,000 tons faster tnan 15 knots an hour, making 12 round trips a year, for which the Government will give Y.169,470 in 1918 and Y.188,497 in 1919.

Newchwang Shipping Returns.—The Newchwang shipping returns for 1917 from March 29th, on which date the port was reopened to navigation, to November 27th, on which date the last cargo-carrier left, give a total of 379 vessels with an aggregate gross tonnage of 297,323 in entries. showing a decrease of 99 vessels of 139,225 tons from the corresponding period of last year.

During last year Japanese vessels, which entered that port, totaled 192 with the aggregate gross tonnage of 205,241, which were increases of 76 vessels of 87,999 tons on the present year. The British steamers decreased to 81 vessels of 82,395 tons in contrast with 108 vessels of 122,131 tons for last year. In addition, three American ships (4,340 tons), one Norwegian (500 tons), and one Russian (1,200 tons) visited the port.

New Chinese Shipping Company.—Planning to develop trade relations between China and Australia, a number of leading Chinese merchants in and near Hongkong have established a steamship company with a capital of $2,000,000, according to advices received by the head office of the Nippon Yusen Kaisha from its branch in Hongkong. The new concern has already purchased a ship of 2,000 tons and negotiations are now under way to buy several other ships to be placed on this run. They will be put under the British flag. Owing to an unusually favorable trade between Australia and Japan, it is expected by the Nippon Yusen Kaisha that such a new enterprise will not adversely affect the shipping of Japan.

Japan's Merchant Fleet.—The Japanese merchant fleet comprised 2,144 steamers with 1,749,453 tons in all at the end of October, which was an increase of 6 ships with 25,700 tons over the preceding month. They were classified as under:

					No. of ships	Gross tonnages
Over	20	under	55	tons	726	21,043
,,	50	,,	100	,,	312	21,821
,,	100	,,	309	,,	310	39,691
,,	300	,,	500	,,	144	44,962
,,	500	,,	1,000	,,	184	132,438
,,	1,000	,,	2,000	,,	138	205,377
,,	2,000	,,	3,000	,,	128	313,357
,,	3,000	,,	4,000	,,	85	285,154
,,	4,000	,,	5,000	,,	34	151,854
,,	5,000	,,	6,000	,,	32	181,268
,,	6,000	,,	7,000	,,	17	110,340
,,	7,000	,,	8,000	,,	11	83,005
,,	8,000	,,	9,000	,,	1	8,150
,,	9,000	,,	10,000	,,	6	57,052
,,	10,000				6	71,901
					2,144	1,749,453

Shipbuilding in Japan.—According to the Department of Communications, the new steamers of 1,000 tons and upwards so far built at the different private dockyards in Japan during 1917 comprised 21 vessels with 112,250 tons at the Kawasaki Dockyard, 16 vessels with 61,000 tons at the Osaka Iron Works, and 69 vessels with 299,684 tons at the other 15 dockyards.

Shipbuilders Big Dividend.—The Ishikawajima Shipbuilding Yard Company of Japan has declared dividends of 35 per cent annum for the past six months, the figure being an increase of 12 per cent per annum over the previous term. Profits amounted to Y.1,164,160 during the latter half of the year.

Kobe Pier Co. Prospers.—The Kobe Pier Company has decided to pay a dividend of 100 per cent, 20 per cent representing the ordinary dividend and 80 per cent a special dividend in commemoration of the 35th anniversary of the Company's establishment. For the previous term the dividend was 30 per cent.

Chinese Shipping Co. in P. I.—The incorporation of a large transportation concern has been effected by several Chinese lumber merchants in the Philippines. The corporation will do business under the name of Singbe Transportation Company, and has an authorized capital of Pesos 300,000, all of which has been subscribed. The company will engage principally in interisland transportation of lumber and freight, and will put into service a steam schooner of 500 tons capacity.

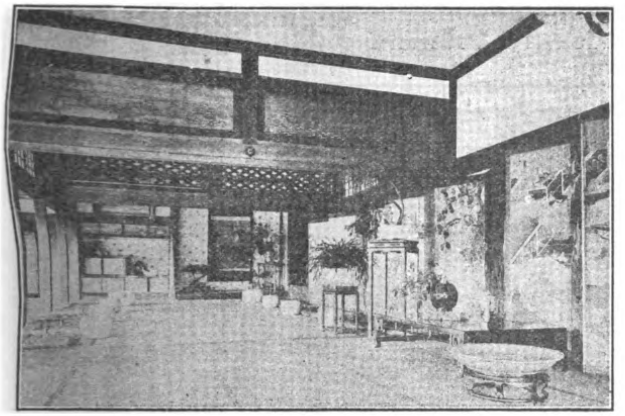
Mitsubishi Workmen to France.—Fifteen workmen of high ability have been selected from among more than 10,000 workmen of the Mitsubishi Engineering and Dockyard Company of Nagasaki, one of Japan's two biggest shipbuilding yards, and are on their way to France to study shipbuilding, on the Kashima Maru of the Nippon Yusen Kaisha, the 16,500 ton ship, which they have built. Many more will be dispatched to France, England and America later and selections are now being made of the next lot to go.

More Ships to Philippines.—The Philippines have been assured of nearly 40,000 tons of shipping, in addition to the 100,000 tons consisting of France steel sailing vessels previously promised, for the transportation of Philippine products exclusively to the Pacific ports of the United States. The rate fixed for sugar is $30 or Pesos 60 per ton. Rates on other products have not yet been fixed. The steamers will be operated by the Standard Oil Company.

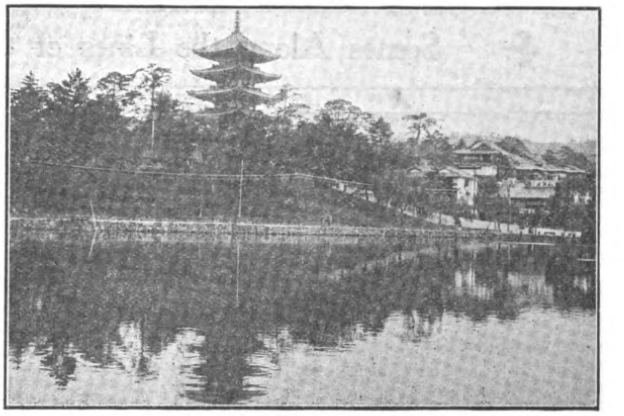
Shipbuilding in Antung.—A company has recently been formed, with Mr. K. Fujita, President of the South Manchurian Bank in Mukden, as chairman of the committee, to establish a company in Antung, entitled the Yalu Shipbuilding Joint-Stock Company. The plan is meeting with great approval from the general public, and payment of the first installment of shares allotted will be completed by the 10th prox., while the general meeting of the establishment committee will be convened in Antung about the same time. The building of the office and hostels, as well as the works recently started, has already been all but completed, while the keel of a sailing vessel of 200 tons to be constructed by the company, has also been laid. By next spring, a few more vessels will also have been constructed. The undertaking by the company is looked on with favor by the Chosen Government-General, which is ready to give to it all the assistance in its power, and will shortly locate an expert in New Wiju for the benefit of the company. Mr. Fujikawa, Governor of North Pyongando, paid a visit to the yard some time ago, and gave encouragement. A Japanese contemporary in Antung, reports that the building of a sailing ship, 500 tons in capacity, the Houn Maru by name, recently in course of construction in a shipbuilding yard in Antung to the order of the Manchuria Steamship Company in Dairen, has been completed, launched, and towed to Dairen. She will be fitted out for coastwise navigation. During the cold season, when the Paiho near Tientsin is icebound, she will be placed on the service between Fusan and Osaka, but after the thaw she will be placed on the regular service between Antung and Tientsin. The company plans to construct two more such ships and launch them next spring.

Japanese Postal Savings Increase.—The Department of Communications reported that postal savings amounted on December 20 to Y.410,556,106 with 16,673,918 depositors. The figures of the preceding year were 14,724,566 in the number of depositors and Y.292,558,636 in amount; and the increase 2,000,000 in depositors and about Y.120,000,000 in amount. The gain in 20 days is 116,722 in the number of depositors and Y.4,977,191 in savings.

Nippon Yusen Kaisha Port Said Line.—At a recent conference of the board of directors of the Nippon Yusen Kaisha it was decided to dispatch two steamers to Port Said with merchandise bound for France and Italy. Carrying war supplies to the Japanese Navy now operating in the Mediterranean and also merchandise for France the Nippon Yusen Kaisha sent the Kamakura Maru and the Awa Maru to Marseilles some time ago. These



TYPICAL RECEPTION ROOM IN A WEALTHY HOME



SARUZAWA LAKE. ONE OF NARA'S SCENIC ATTRACTIONS

To Japan from railways in West Europe. Amsterdam (Central station, Weetperpoort, or Muiderpoort). Antwerp (Central or South station), Berlin (Metropolitan station). Bordeaux (Saint Jean), Boulogne Ville, Bremen, Brussels, Calais Maritime, Cherbourg, Cologne, Dieppe, Dover, Frankfort (on Main), Hamburg, Altona Hague (State Railway or Holland Railway stations), Havre, Liege (Guillemin), Lille, London, Lyons, Marseilles, Nantes, Ostend (Quai), St. Nazaire, St. Quentin, Vienna (North station), Paris, Botterdam (Mass, Beurs, or D. P.)

From Japan to London, Paris, Berlin, and Vienna.

(To Vienna from Tokyo and Yokohama only.)

Russian Railways from or to Petrograd, Moscow, Warsaw, Odessa, Irkutsk, Verdzbolovo, Riga, Alexandrovo, Granitza, and Kiev. (From Japan, to the first four cities only.)

Chinese Eastern and Ussuri Railways, from or to Manchuria, Tsitsihar, Harbin, Vladivostok, and Habarovsk.

Imperial Government Railways, from or to Tokyo, Yokohama, Kyoto, Osaka, Kobe, Shimonoseki, Moji, and Nagasaki. (Railway City Offices in Tokyo, Yokohama, Kyoto, and Osaka.)

Through Traffic to West Europe.—For Vienna via Moscow-Warsaw

For Berlin via { Moscow / Viatka Petrograd-Verdzbolovo ; Moscow-Warsaw Alexandrovo / Skalmierzyce }

For Paris via Berlin-Aix-la-Chapelle-Verviers-Liége-Jeumont

For London via Berlin-Aix-la-Chapelle-Liége-Ostend-Dover / Berlin-Hannover-Hoek-van-Holland-Harwich

Coupon Books.—For Trans-Siberian International Traffic first and second class coupon books good on all trains and available for 3 months.

For Russo-Manchurian-Japanese Through Traffic first and second class coupon books good on all trains, and second and third class coupon books good on ordinary trains. Both available for 60 days.

For Manchurian-Japanese Through Traffic first and second class coupon books good on express trains, and first, second, and third class coupon books good on ordinary trains. Both available for 35 days.

Circular Tours Between Japan and London.—Under the International Through Traffic arrangements established among certain railways and steamship companies in Europe and the Far East for the circular tour between Japan and European ports via Suez and Siberia, circular tickets between Tokyo, Yokohama, Osaka, or Kobe, and London are issued as follow:

Stations and Offices where the tickets are sold:—Tokyo, Yokohama, Osaka, Kobe, and the City Offices in Tokyo, Yokohama, and Osaka.

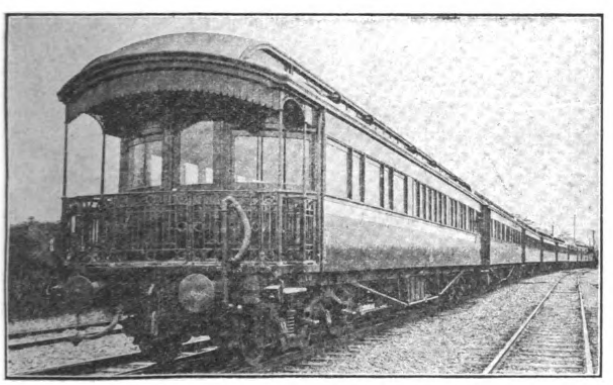
Route covered by the tickets:—Departure point—Shanghai-Suez-London-Ostend-Aix-la-Chapelle-Berlin Alexandrovo / Kalisz Moscow-Cheliabinsk-Manchuria Vladivostok / Dairen departure point, or vice versa.

Kinds and validity of the tickets:—First and second class, both available for 24 months.

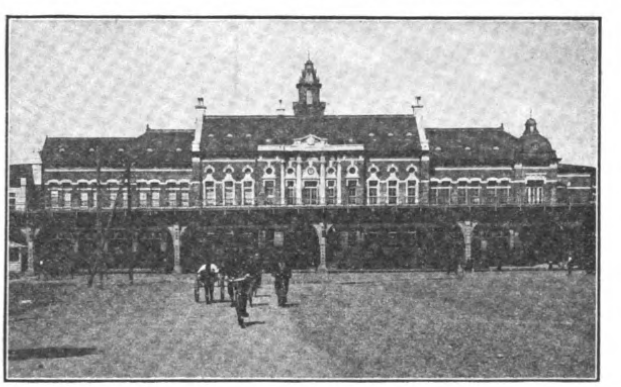
Around-the-World-Tours.—The Around-the-World Tour arrangements have been made in coöperation with the Canadian Pacific Railway Steamship Co., via Moscow or Petrograd over the Trans-Siberian Route, Starting from Yokohama, Kobe, and Nagasaki.

Japan-China Through Traffic

In consideration of the economic relation destined to grow closer between Japan and China, a Conference sat at Tokyo in 1913 to open the passenger through traffic between the Peking-Mukden Line and Japanese



OBSERVATION CAR ON EXPRESS TRAIN



YOKOHAMA STATION

railways. Difference in the standard of currencies, discrepancies in regulations between the various railways, etc. made the arrangement difficult to conclude, but thanks to the concession on the part of the Chinese representatives through traffic was opened in October, 1913.

After several conferences, the through traffic arrangement has attained its perfection, and practically all the railways in Middle and North China have come to participate in the present arrangement.

Stations and City Offices open to the Through Traffic.

Imperial Government Railways of Japan	Tokyo, Yokohama, Nagoya, Kyoto, Osaka, Sannomiya, Kobe, Shimonoseki, Moji, and Nagasaki. City Offices in Tokyo, Yokohama, Nagoya, Kyoto, and Osaka.
Chinese Government Railways	(Peking-Mukden Line) Peking, Tientsin, Shanhaikuan, and Hsinm n. (Peking-Suiyuan Line) Kalgan and Nankow. (Peking-Hankow Line) Hankow, Chekiatchouang, and Tchengtcheou. (Tientsin-Pukow Line) Pukow, Hsuchowfu, and Tsinanfu. (Shanghai-Nanking Line) Shanghai and Nanking. (Shanghai-Hangchow-Ningpo Line) Hangchow.

Routes.—The route open to the present through traffic is via Fusan, Antung, and Mukden. Passengers will travel by the Imperial Government Railways to Shimonoseki or Moji from their respective departure points in Japan. Passage from Shimonoseki to Fusan is effected by one of the channel steamers run by the Imperial Government Railways. On landing at Fusan pier, passengers will board the trains of the Chosen Railway, which traverse the peninsula and reach Antung. Here passengers for Mukden must change to the trains of the South Manchuria Railway, unless traveling by the Chosen-Manchuria Through Express. Mukden is the terminus of the Chinese Peking-Mukden Line, the trains of which come round to the Mukden station of the South Manchuria Railway, where passengers have to change cars. On the Peking-Mukden Line, through trains are run daily between Mukden and Peking (Chengyangmen station). Passengers for the stations of the Tientsin-Pukow Line and beyond have to change at Tientsin. Again for the Shanghai-Nanking Line, passengers will proceed from Pukow to Nanking Ferry or Hsiakuan by steam launch. The ferry is one mile distant from Nanking station and principal express trains only depart from the ferry station. For the Shanghai-Hangchow-Ningpo Line, passengers change cars at Shanghai North Station. For the Peking-Suiyuan Line, through passengers have to proceed from Peking Chengyangmen station to Hsichihmen station by the Round City Branch and take the main line trains at the latter station. To reach the destinations on the Peking-Hankow Line, there are two routes, viz., via Peking and via Fengtai. If following the former route, passengers are required to arrange for their own conveyance in Peking between the Peking-Mukden Line station and the Peking-Hankow Line station. Passengers via the latter route have to change at Fengtai, and again at Changsintien to join the main line trains.

Coupon Books.—The coupon books are of three kinds, namely, first, second, and third class, and are available for 40 days, including day of issue.

Free Luggage Allowance.—Luggage up to 160 lbs., 120 lbs., and 80 lbs., is allowed free for the first, second, and third class through passenger, respectively.

Through Return Tickets.—Japan-China Through Return Tickets are issued at 20% reduction of ordinary fares, between stations open to the Japan-China Through Traffic, with the privilege of prolonged validity of 100 days including the day of issue.

Party Trip Tickets.—Japan-China Party Trip Tickets are issued as follow:

Fares:—For 10 or more passengers at 25% reduction on all railway lines.

For 20 or more passengers at 30 or 50% reduction on Japanese Railway lines; at 30% reduction on Chinese Railway lines.

Local Rates of Party Reduction shall be applicable when such rates are higher than those shown above.

Validity of Tickets.—Two months.

Routes.—Return trips between Japan and China via Chosen or Circular Tours.

Any other information and assistance in planning party trips will be cheerfully supplied by the Traffic Departments of the Head Office and Divisional Superintendent Offices of the Imperial Government Railways, the through booking stations and city offices, etc., or may be obtained in Chosen or China.

Circular Tours.—For the benefit of tourists from Japan to China, or vice versa, Circular Tour Tickets between Japan and China are issued at 30% reduction for railways and 25% reduction for steamers over the circular routes joining the railway route via Chosen and the steamer routes on the Yangtze and between Shanghai and Japanese ports, roughly as follow:

Stations, etc., where Booked:

Imperial Government Railways of Japan:

Japan-China Through Traffic stations and city offices and Fusan Port. (For the routes covering the N. Y. K. steamer line to Shanghai as the first section from Kobe, Shimonoseki, Moji, and Nagasaki, the N. Y. K. offices book tourists, but the railway stations do not.)

Chinese Government Railways:

Japan-China Through Traffic stations. (Except Chekiatchouang and Tchengtcheou on the Peking-Hankow Line and Hsuchowfu on the Tientsin-Pukow Line. For the routes covering the N. Y. K. and N. K. K. steamer lines as the first section from Shanghai and Hankow, the steamship companies' offices book tourists, but the railway stations do not.)

Circular Tour Routes.—There are two circular routes from Japan. From Japanese points to Peking tourists will travel via Chosen, the two routes diverging at Peking. By the first of the two routes, Hankow is reached by the Peking-Hankow Line, whence tourists sail by the N. K. K. steamer down the Yangtze to Shanghai. By the second route, tourists turn back from Peking to Tientsin, whence they proceed to Shanghai via Tsinanfu, Pukow, and Nanking by the Tientsin-Pukow and the Shanghai-Nanking Lines. The passage from Shanghai to Japanese ports is performed by the N. Y. K. steamers, passengers landing at Kobe when bound for stations east of Kobe. The routes are reversible, viz., first sailing to Shanghai and coming back via Chosen.

Passengers from Fusan Port will reach Shimonoseki by the I. G. R. channel steamers, whence they sail for Shanghai and then return to Fusan by way of Peking and Antung, via Hankow or via Nanking-Tsinanfu.

Passengers from China are scheduled to reach Tokyo via Chosen and, turning back to Kobe, sail for Shanghai, thence returning to their respective departure points. The route is reversible.

The above is a general description of the circular tour routes. First and second class steamer passengers between Japanese ports and special class steamer passengers between Nanking and Shanghai are enabled to travel by rail instead of by steamers. Also the two routes between Nagoya and Osaka via Maibara-Kyoto and via Kameyama-Nara are open to tourists' option.

Classes of Accommodation

Classes of Tickets	1st	2d (Superior by steamers)	2d	3d
I. G. R. and Chosen Ry.	1st	2d	2d	3d
S. M. R. and C. G. R.	1st	2d	2d	2d
N. Y. K.	1st	1st	2d	3d
N. K. K.	Spec.	Spec.	Spec.	1st

(Chinese or Foreign 2d.)

Foreign second class accommodation is limited to the S. S. Fengyang, and holders of second class (not superior by steamers) circular tour tickets may obtain a refund of the difference between special and foreign second class (Y.12.00 for passengers departing for Japan and $12.60 for passengers departing from China) on application to the N. K. K. branch office at the port of embarkation.

Period of Availability.—Four months including day of issue.

Reduction Certificates attached to each ticket entitle the holders to 30% reduction for return tickets on the following sections and for the classes corresponding to those of their Circular Tour Tickets.

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

The Shih-Chen Loan.—The agreement for a further loan of Y.2,600,000 from the Yokohama Specie Bank for the construction of the Shihpingchieh-Chenchiatun Line was formally signed by Mr. Tsao Ju-lin, Minister of Communications and the agent of the Yokohama Specie Bank recently and the following are the important points:

1. Amount: Y.2,600,000.
2. Interest: seven per cent per annum.
3. Term of loan: one year.
4. Security: the Shih-Chen Line.

Chinese Railway Profits.—Profits made on the railway and telegraphic service in China for the year 1917 were $13,500,000 and $3,800,000, respectively, while the loss of the postal service for the same period was $110.000, according to the report submitted by the Ministry of Communications to the President and Cabinet. This leaves a net profit of $17,190,000 to the Government.

Through Traffic in Shantung.—It has been agreed that the negotiations for through traffic between the Shantung Railway and the Tientsin-Pukow Railway, which were discontinued last summer, shall be resumed.

Mr. Senshu (Traffic Manager of the Shantung Railway) visited Tientsin and Peking towards the end of last December to discuss the detailed regulations of the through traffic with Director Hsu. The detailed regulations, which formed the subject of consideration between the representatives of the two railways, were amended according to the Chinese proposals and were signed only recently, ready to be presented to the Communications Office, Peking, for sanction.

It is expected that the through traffic will be inaugurated soon.

Fifty Ton Electric Locomotives.—The 50 ton electric locomotives for use by the Fushun Collieries for freight handling are the first of their kind built at the South Manchuria Railway Workshops. They are for the standard gauge.

The locomotive is designed to have the tractive force of hauling 580 ton trains at the speed of 12.9 miles per hour on the level tangent track, exclusive of the weight of the locomotive, the trolley voltage being 1,200 volts D.C.

The maximum instantaneous tractive effort for starting purpose will be 28,400 lbs., with a current of 266 amperes per motor, assuming 25 per cent coefficient of adhesion.

The locomotive is of the two bogie type, each bogie carrying 125 H. P. motors. It is equipped with two current collectors of the roller pantograph and multiple unit controller.

The chief dimensions of the locomotive are as follow:

WEIGHT

Total weight	97,200 lbs.
Ballast weight	15,200 ,,
Weight on drivers	112,400 ,,
Weight per driving axle	28,100 ,,
Weight of a motor (about)	5,000 ,,

WHEEL BASE

Total wheel base	20 ft. 9 in.
Rigid wheel base	5 ,, 3 ,,

MOTORS

No. and size of motors	4-125 H.P.
Trolley voltage	1,200 volts D.C.

WHEELS

No. of driving wheels	8
Diameter of driving wheels	40 in.

AXLES

Diameter between wheels	6¾ in.
,, at motor suspension	6¾ ,,
,, at gear	6¾ ,,
,, at journal	4 9/16 in.

GEAR RATIO

Gear Ratio	1 : 5.53

CAB

Type, Steel sloped

Length over cab	29 ft. 4 in.
Height over cab from top of rail	11 ,,
Length between knuckle faces	36 ,,
Width over all	9 ,, 8 ,,

Amur Railway in Financial Straits.—The Director of the Amur Railway has asked the local government of the Amur province to render sorely needed relief. According to him, the operation of the train service will result in a deficit amounting to 2,000,000 rubles per month. In addition 2,000,000 rubles will be wanted to repay the outstanding liabilities falling due each month. On this account, the defrayment of R. 6,000,000 per month from the local government funds until the Petrograd Government sends relief is asked.

Russian Railway Troubles.—M. Wentzel, Director of the Chinese Eastern Railway, telegraphs from Petrograd to General Horvath the impossibility of executing railway indents, owing to all the railway's capital being in the hands of the Ministry of Finance, which the Bolsheviks have commandeered.

Bridge Collapses on Kin-Han.—The most serious accident that has yet occurred on the Peking-Hankow Railway since it was built happened recently through the breaking of a bridge near Hwayuan beyond Siaokan in Hupeh province, says *C. C. Post*. A train of trucks was going north packed with soldiers who had run away from the recent fighting and were homeward bound. The bridge broke beneath the weight of the engine, which fell down a considerable height on the river bed—at present practically dry—and the trucks came down on top of it. They caught fire and the whole train was burned. The soldiers who escaped unhurt promptly ran for their lives in all directions and few of them have been seen since. Very little could be done in the way of rescue, and there were few there who knew how to set about it. The resu't was the loss of a train with about seventy lives, as far as is known, and a very considerable number of injured, some of whom have been brought back here.

Takutang (Kiangsi) Model Settlement.—To the left of the Kiukiang railway station at Takutang, says the *North-China Daily News* correspondent, some enterprising business men are reclaiming a large tract of land. This is our in embryo model Shanghai. The scheme has been thought of for many years, and Chang Mo-chi and other leaders have done much to encourage it. The plan is to recover a stretch of inundated country and build thereon a model settlement. The work of filling in is going on at present and will be practically finished before the summer water rises. More than 1,000 men are employed daily in this enterprising scheme. Several temporary bridges have been erected over the creek; over these light railways have been constructed, which convey mud and earth from different directions. An immense bank of earth in front of John L. Duff's farm is being removed; mud is also being carted from the bed of the lake. When the whole is filled in, banked and leveled, the idea is to divide it into lots among the present investors. The streets are to be straight, the houses uniform, and the whole settlement laid out in the latest style. Immediately behind this new city will be Kiukiang's summer lake.

Chinese Eastern Railway.—The Bolshevik Commissioner of Communications has, says the *North-China Daily News* Correspondent at Harbin, telegraphed to General Horvath immediately to proceed to Petrograd and report on railway matters, which are now placed under the Ministry of Communications instead of that of Finance. General Horvath replied that it was impossible to leave Harbin, owing to the presence of the newly appointed Chinese President of the railway.

Mr. Kuo Tsung-chi has published a notification to the railway employees announcing that he has assumed the position of President on the instructions, of the Chinese Minister of Communications. He will make the round of the various departments the heads of which will be presented to him. It is expected that, after becoming familiar with the working and methods of the railway, he will return to Kirin.

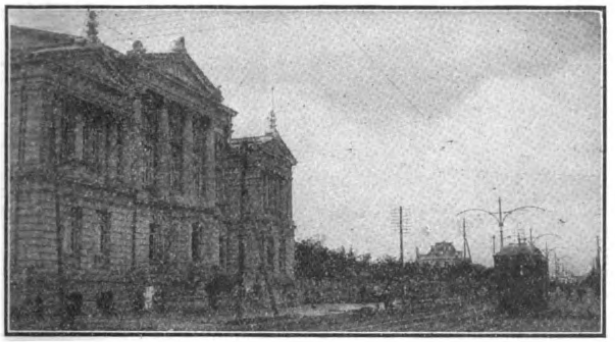
SHIPPING

Japanese Ship Subsidies.—The Japanese Government's shipbuilding bounties for the new, fiscal year are put at Y.4,636,725 for forty-five vessels, with 209,000 tons, 131,000 H.P., showing a decrease of Y.1,894,505 from the preceding fiscal year.

Salvage of Kasuga.—According to a recent report to Tokyo, the Japanese cruiser Kasuga which was stranded on an island of the Dutch East Indies stands fair chances of being refloated.

A salvage crew consisting of an engineer and 120 hands was dispatched from the Kure Naval Dockyard to the scene.

The Kawasaki Output.—Since last year, the Kawasaki Dockyard Company has constructed seventeen stock boats of over 9,000 tons and under 12,000 tons, of which one was



General Offices of the South Manchuria Railway, Dairen

The Yamato Hotel, Dairen

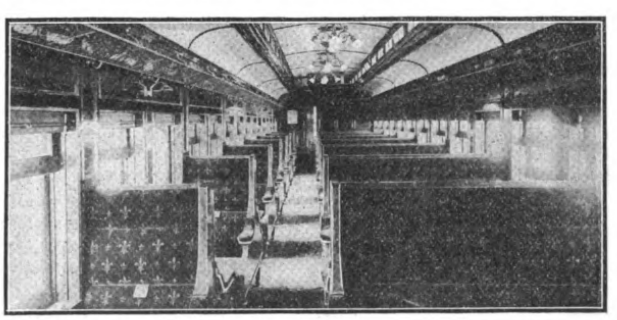
The Railways of Manchuria and Korea

Probable Instruments of War Which Do Valuable Work in Times of Peace

The South Manchurian and Chosen (Korea) railways, which have become noted as an important and up-to-date section of the world's greatest railway system, that of the vast Eurasian Continent, are once again brought before the public eye as probable instruments of war. By these lines will be effected much of the transportation in connection with the military operations which Japan will undertake if she employs her strength in the straightening out of the muddle in Siberia and eastern Russia. In the event of this far-reaching development Japan will have at her hand a remarkably efficient service. Money, energy, and scientific skill have not been spared by Japan since the conclusion of her war with Russia to make the railways potential in peace, and now, if they become once more roads to war, they will be found equally efficient—and to the last degree.

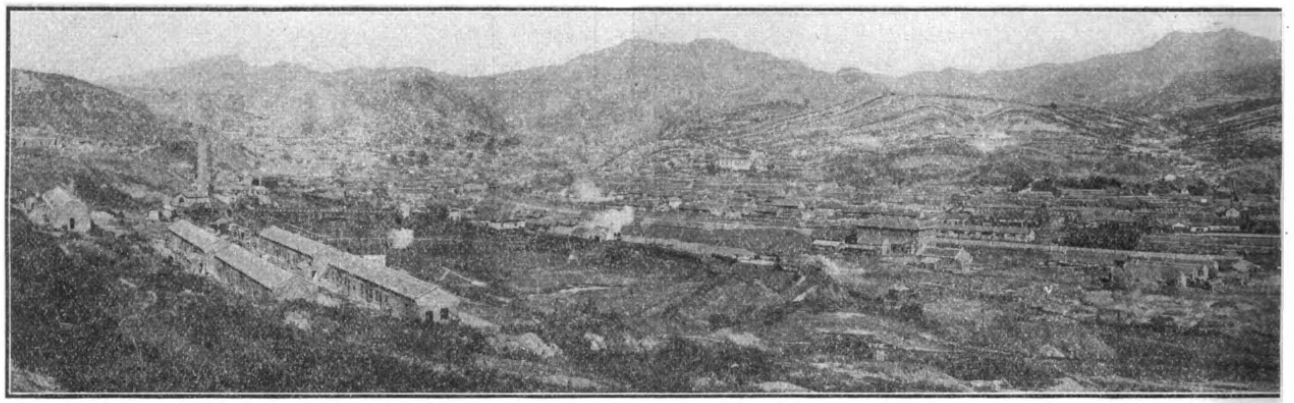
The final section of the main line through Korea and the Antung-Mukden line were born of war. As a light line the latter was constructed by the Japanese military engineers to convey the armies of Japan to the fields of Manchuria where the Russian hordes were overthrown. It was run across the mountains in an extraordinarily short space of time and zigzagged its way through the valleys and over the ranges wherever hold could be secured, sometimes precariously clinging to the steepest of mountain sides and most times awe-inspiring as a means of transportation to those compelled to travel over it.

As an engineering feat the construction of this line was a triumph, and no less a triumph was the ultimate conversion of it to purposes of peace. The work of reconstruction was commenced in August, 1909, and cost Y.17,561,000 (over 1¾ million pounds). Over 20,000 men were employed on the work at the same time. The main line from Mukden to Antung is 170 miles in length, in addition to which there are thirty-five miles of sidings. For about 135 miles the line runs through nountainous districts, which taxed the engineering skill of the company to the utmost. As many as 205 bridges had to be erected, of an aggregate length of 22,754 feet, the longest being that over the river Taitze of 1,786 feet. To avoid the steep gradients of the original line, twenty-four tunnels were bored, of an aggregate length of 26,579 feet, the four main tunnels being Fuchinling, 4,884 feet (between Chiaotou and Fuchin), Chikuanshan, 3,254 feet, and Heikengling, 1,505 feet (between Chikuanshan and Chiumuchuang), and Fenshuiling, 1,914 feet (between Tsaohokou and Chichiapu). There are also 213 culverts, aggregating 3,608 feet. Simultaneously with the opening of this new line on the standard gauge, the opening of the new railway bridge across the river Yalu was celebrated on November 1, 1911. This bridge, which is the most gigantic work of its kind in the Far East, being 3,097 feet long, was commenced in August, 1909.



First Class Carriage on the South Manchuria Railway

In the war this line proved the chief factor in Japan's victory; in the years of peace that have ensued in this region since 1905 it has, with the South Manchuria Company's lines and the Chosen system, been a means of demonstrating to a vast slice of backward country the enormous value of modern methods of transport in development of hitherto untouched or unmarkable natural resources, while at the same time the system under the control of Japan has proved to the world at large how readily distance may be annihilated and how easily may the dictum of Kipling be falsified that "the East is East and the West is West, and never the twain shall meet." Not only has the Japanese system become an important integral part of the greatest railway service in the world, affording in the piping times of peace a rapid medium of intercourse between the East and the West, but it also, by virtue of its connection with the growing railway system of China, furnishes a not to be underestimated link for the closer unity of the two greatest of Oriental peoples. The arrangements for through booking from China to Japan, and vice versa (as well as from China and Japan to Europe, and vice versa), places at the disposal of all Chinese and Japanese in particular an easy means of closer association which is being more and more used. The rise of Japan to national eminence of the first magnitude has evoked a spirit of inquiry among the thoughtful of the people of sluggard China, and increasing numbers of them are trending Eastwards to see what they can see and learn what they may. As time goes on this movement will increase, and if the Chinese can have driven home to them no more than the significance of the constructive work of the Japanese and the importance of the development of their economic resources, the lessons will be of national value to China in the ultimate. The Chinese need some fillip, and the sight of the rise of Japan may give it to them, if nothing else will. The Chinese have no one to blame but



PANORAMA OF PENCHIHU, THE GREAT COLLIERY AND STEEL MILL TOWN

themselves if they do not avail themselves of the opportunity to fare forth and see what is to be seen which the perfected railway system between China Proper, Manchuria, and Korea presents to them. Every facility for the journey is provided, and on the Japanese controlled lines at least are to be found conveniences second to none in the world.

To see what has been done in the way of railway development in Manchuria and Korea, and what has been done by the railway in developing those two hitherto backward countries is worth a visit by all patriotic Chinese.

The South Manchuria Railway Company has laid itself out to build up its railway service, and properly to do that it has devoted great sums of money to the promotion of industries and the expansion of agricultural effort. All along the railway zone, as a result, are to be noted the signs of industrial and agricultural progress. Capitalists are encouraged to invest their wealth, and laborers to employ their brawn, and this has been done to such purpose that Manchuria stands out in striking contrast with China proper as a field of enterprise. The romance of the soya bean alone is striking testimony to the foresight and energy of the Japanese, while the coal and iron mines, the minor industries constantly being promoted and developed, and the general effort to organize the economic wealth of the territory affords the student much to ponder over. Old towns have grown in importance, new ones have sprung up, and in general the shifting of trade centers caused by the development has been nothing short of remarkable.

Details of the Company

The following details with regard to the South Manchuria Railway Company were written by United States Commercial Attaché A. W. Ferrin, now at Peking:

By a stroke of the pen on August 1, 1917, the South Manchuria Railway Company more than doubled its operated mileage and became de jure what it had long been de facto, one of the great railway systems of the world. On that day was signed the agreement that placed the 1,000 miles of railways in Korea under the management of the South Manchuria Railway Company, giving the latter a through line under its own management from Fusan, the Korean port nearest Japan, to Changchun (Kwanchengtze), Manchuria, where connection with the Russian railway system to Harbin and thence to Petrograd is effected. To one who is familiar with the geography of Korea and Manchuria, the significance of this far eastern railway merger is obvious.

Under this plan, all the main points of which took effect August 1, the direction of the South Manchuria Railway (including the Korean lines), the Japanese gendarmerie in southern Manchuria, and the Japanese consular service in that province are intrusted to the governor of the Japanese Leased Territory.

Colonization and Banking Activities

The Governor General commented on the drawing together of the Government of Chosen (Korea) and that of the Leased Territory through the Chosen railways, stating that the activities of the Oriental Colonization Company and the Bank of Chosen in Manchuria "will also afford fresh opportunities to bring South Manchuria and Chosen to a better mutual understanding."

The Oriental Colonization Company, which was organized for the development of Korea, has not yet done much in Manchuria, but the Bank of Chosen has already established ten branches there, and is empowered to issue circulating notes for Manchurian use. One might do considerable traveling in southern Manchuria without discovering that there was any kind of money except Bank of Chosen notes, while a very important part of the discount business in cities along the railway line is done by the branches of this bank. The South Manchuria Railway, however, is the most evident, and probably the most effective factor in the Japanese economic development in Manchuria.

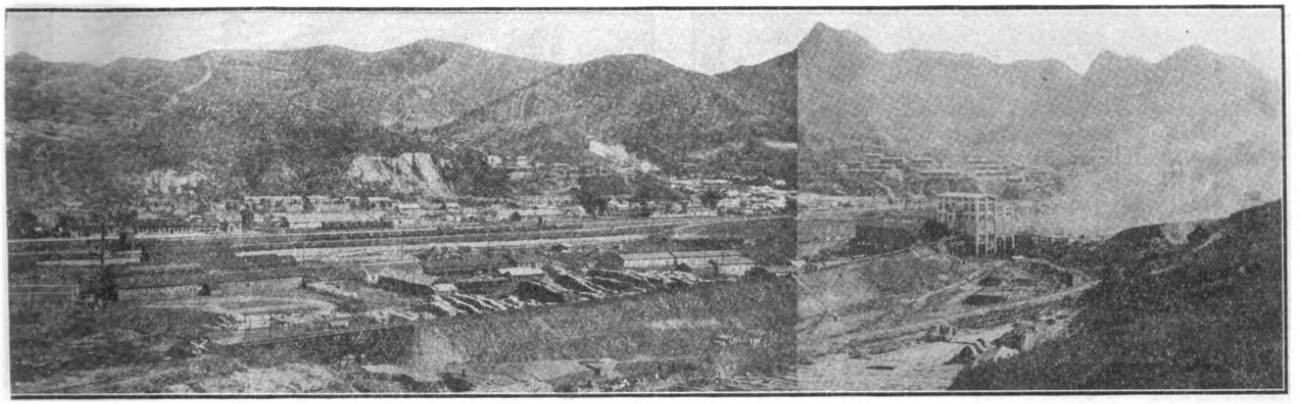
The South Manchuria Railway was originally a part of the Chinese Eastern, built by Russia to connect the Trans-Siberian line with the mild-temperature ports of Dalny (Dairen) and Port Arthur. By article 6 of the treaty of peace which concluded the Russo-Japanese War, the Russian main line from Changchun to Dalny, with all properties, including coal mines, formerly owned by Russia, passed into the hands of the Japanese Government in September, 1905. Early in the following year, the South Manchuria Railway Company was organized, with an authorized capital of 200,000,000 yen (about $100,000,000) divided into 1,000,000 shares.

Japanese Government Guarantees Dividend

The Japanese Government turned over to the new company all the acquired railway property in Manchuria, at a valuation of 100,000,000 yen, for which it took 500,000 shares, or half the authorized capital of the South Manchuria Railway in payment. The other 500,000 shares were allocated to the public, the Japanese Government guaranteeing an annual dividend of 6 per cent. The first issue of public shares was limited to 100,000, and was oversubscribed 1,066 times. Further issues were made from time to time, as the company needed money for extension work, and 300,000 shares are now in the hands of the public. The shareholders are receiving not only the guaranteed dividend of 6 per cent per annum, but also a supplementary dividend of 2 per cent. Dividends to the Government on its 500,000 shares are limited to five per cent per annum.

Besides selling stock to obtain money for the reconstruction and development of the system, the company at various times has issued and sold debentures, principal and interest guaranteed by the Japanese Government, all of which are floated in London, as follows:

First issue, £4,000,000 ($19,466,000), dated July 19, 1907, redeemable within 25 years; interest 5 per cent.



WHICH IS GROWING UP IN A RICH MANCHURIAN ORE DISTRICT

Second issue, £2,000,000 ($9,733,000), dated June 1, 1908, redeemable within three years; interest 5 per cent.

Third issue, £2,000,000, dated December 16, 1908, redeemable July 23, 1932; interest 5 per cent.

Fourth issue, £6,000,000 ($29,199,000), dated January 1, 1911, and repayable January 1, 1936; interest 4½ per cent.

From the proceeds of the fourth issue, the notes issued in June, 1908, were paid off. The outstanding debentures on March 31, 1917, therefore, were equally divided between 5 and 4½ per cent issues, with £6,000,000 of each. At par of exchange the total is equal to 117,156,000 gold yen.

The railways acquired by the Government from Russia and turned over to the South Manchuria Railway Company were: Main line, Changchun to Dairen, 437½ miles; Port Arthur branch line, 28.8 miles; Liushutun branch line, 3.6 miles; Yingkou branch line, 13.4 miles; Yentai branch line, 9.7 miles; Fushun branch line, 38.9 miles; Mukden-Antung line, 189 miles.

Progress on Reconstruction of Lines

The gauge of these lines, except the Mukden-Antung, was 3 feet 6 inches. The Mukden-Antung line was a light railway of only 2 feet 6 inches in gauge.

Immediately after beginning operations, the South Manchuria Railway Company started on the reconstruction of the lines which were 3 feet 6 inches to the standard gauge of 4 feet 8½ inches, and by June 1, 1908, the entire main line and the Fushun and Yingkou branches had been rebuilt. The main line had also been double-tracked between Dairen and Suchiatun, 238⅓ miles. Work on the reconstruction of the Mukden-Antung light railway was then begun, and by November, 1911, this line had also been entirely reconstructed to standard gauge with heavy rails. In the meantime the short lines in Manchuria had been rebuilt.

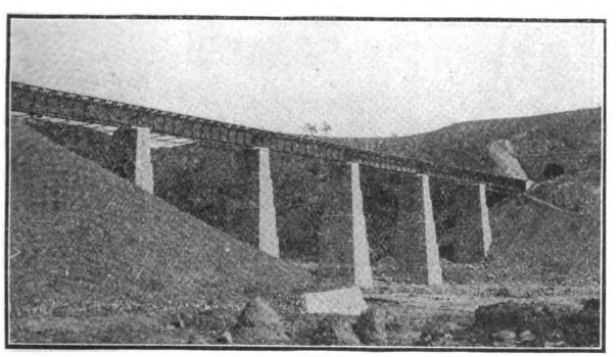
The improvement of the Mukden-Antung line made possible the running of through passenger trains from the Chosen (Korea) railways to Changchun, and such trains were run three times a week up to the beginning of the European War, when the service was curtailed to one through express a week from Fusan to Changchun, connecting with the Trans-Siberian Railway over the Chinese Eastern from Changchun to Harbin. Two trains a day, however, make close connections at Antung-Shingishu, on the Korean border, with South Manchurian trains connecting with the Chinese Eastern at Changchun. These same trains are also met at Fusan by steamers from Shimonoseki which connect there with the two trains de luxe on the Imperial Japanese railways, so that it is possible to go through with little loss of time for changes from Tokyo to Harbin every day in the week. Now that the management of the Chosen railways has been intrusted to the South Manchuria Railway Company, it is probable that through trains will be run daily from Fusan to Changchun without change of cars.

Additional Service by Steamers

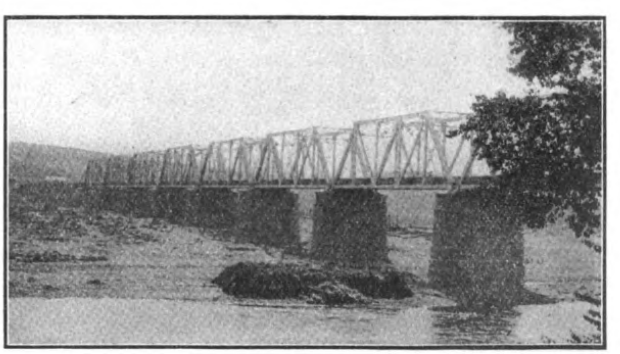
In addition to the extension of its passenger service to Japan, through Korea, the South Manchuria has also, by means of steamers owned or chartered, opened a twice-a-week service from Dairen to Shanghai, one of these ships now stopping each way at Tsingtau, the port in the Shantung Peninsula that was captured from Germany at the beginning of the war. The company also runs boats to Chefoo and other ports on the Gulf of Pechili.

In connection with the passenger service, large European-style hotels are maintained by the company at Changchun, Mukden, and Dairen. These, with the Chosen Railway hotels at Fusan, Seoul, and Shingishu, will now be put under one manager, appointed by the South Manchuria Railway Company.

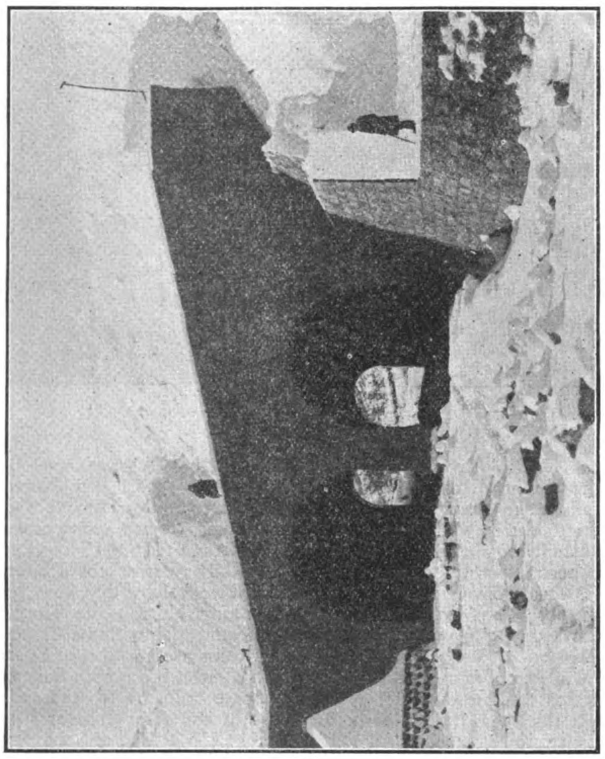
The largest element in the growing freight traffic of the South Manchuria is the soy bean, which is transported from northern

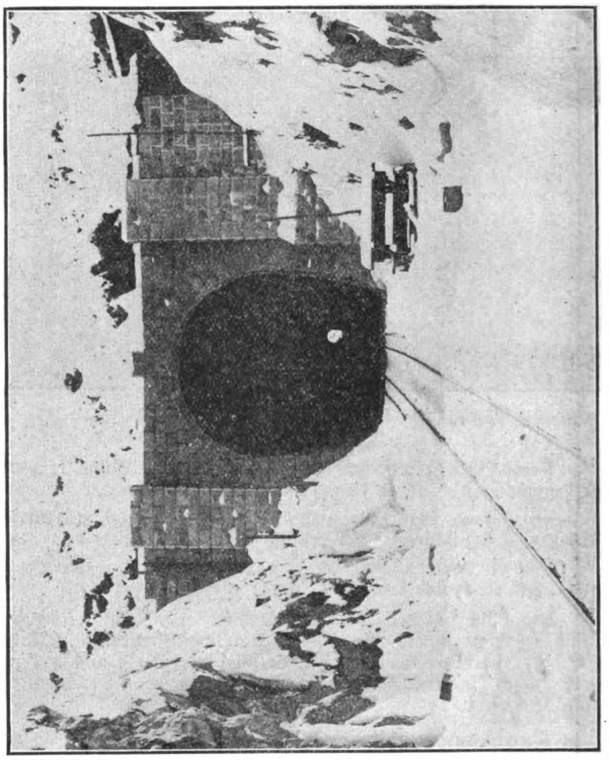


BRIDGE AND TUNNEL, MUKDEN-ANTUNG LINE

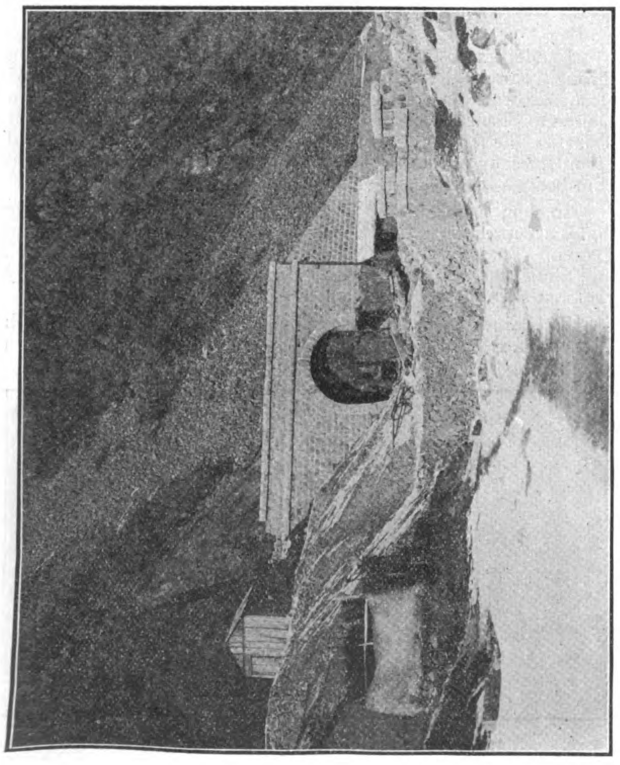


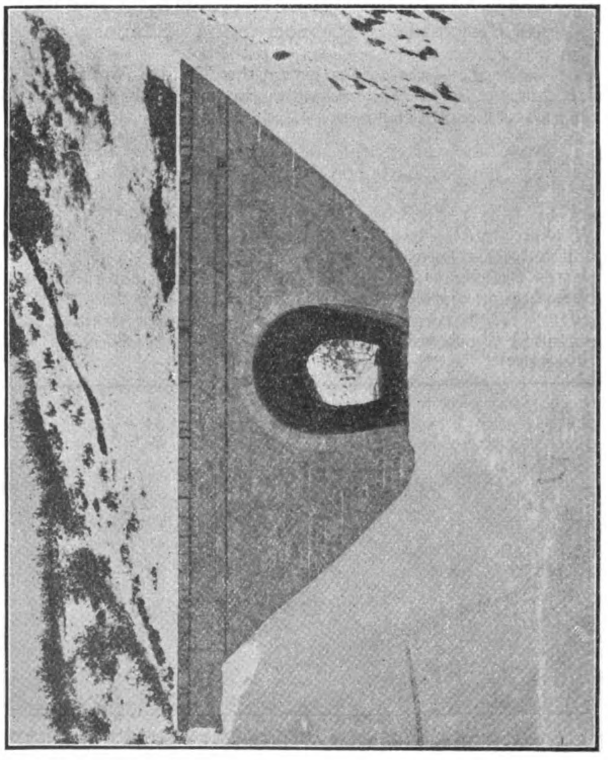
BRIDGE NEAR PENCHIHU, MUKDEN-ANTUNG LINE

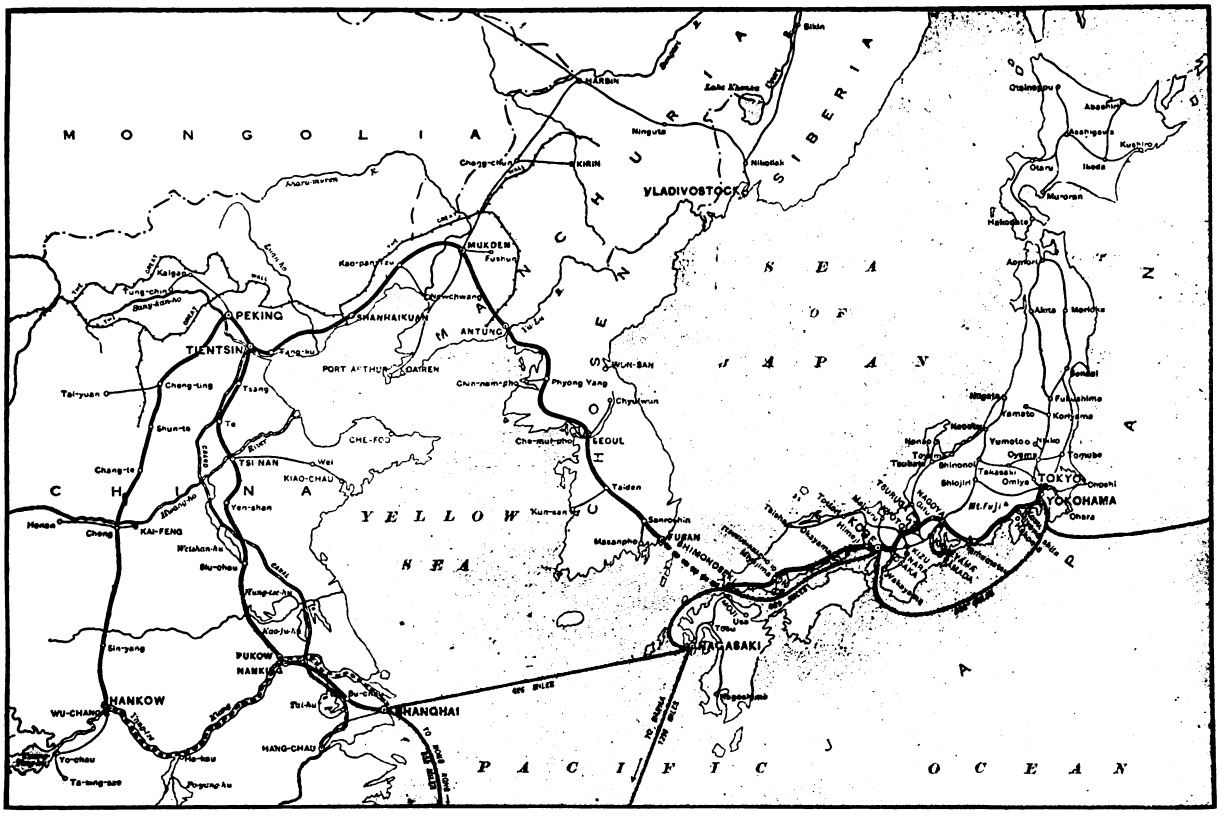




ANTUNG MUKDEN TUNNELS







IMPORTANT LINES IN THE THROUGH TRAFFIC SYSTEM OF EAST ASIA, WHICH INCLUDES JAPANESE, KOREAN, MANCHURIAN, AND CHINESE RAILWAYS

Manchuria to Dairen, where 60 bean-oil mills produce the oil, which is mainly exported to America, and bean cake, which is the great Far Eastern fertilizer. Large harbor works, which the Russians began, have been about completed by the Japanese, and Dairen is becoming a very important port. Direct service with America is now being talked of, to be composed of special bean-oil ships. From Mukden southward corn is the chief Manchurian product, the country traversed by this part of the railway bearing a very close resemblance to the corn-growing states of America. Traffic in general merchandise is, of course, rapidly increasing as Manchuria develops.

Locomotives, cars, and their equipment taken from the Russians became obsolete for Manchuria as soon as the railway gauge was changed and were sent to Japan to be used on the narrow-gauge lines there. New equipment was bought in America and Europe, but in decreasing quantities, as the railway's own shops at Dairen grew. In 1908 the company began the construction of a new and modern car and engine manufactory at Shakako,* a suburb of Dairen, and this plant, completed in August, 1911, now supplies practically all the needs of the company. The Shakako establishment also makes modern trolley cars for the city of Dairen, and it is expected that it will develop an export business in steam and electric railway equipment. The trolley service in Dairen is part of the South Manchuria Railway, and so are the gas works. The company has also established electric works at Mukden, Changchun, and Antung.

Railway Mines Its Own Coal

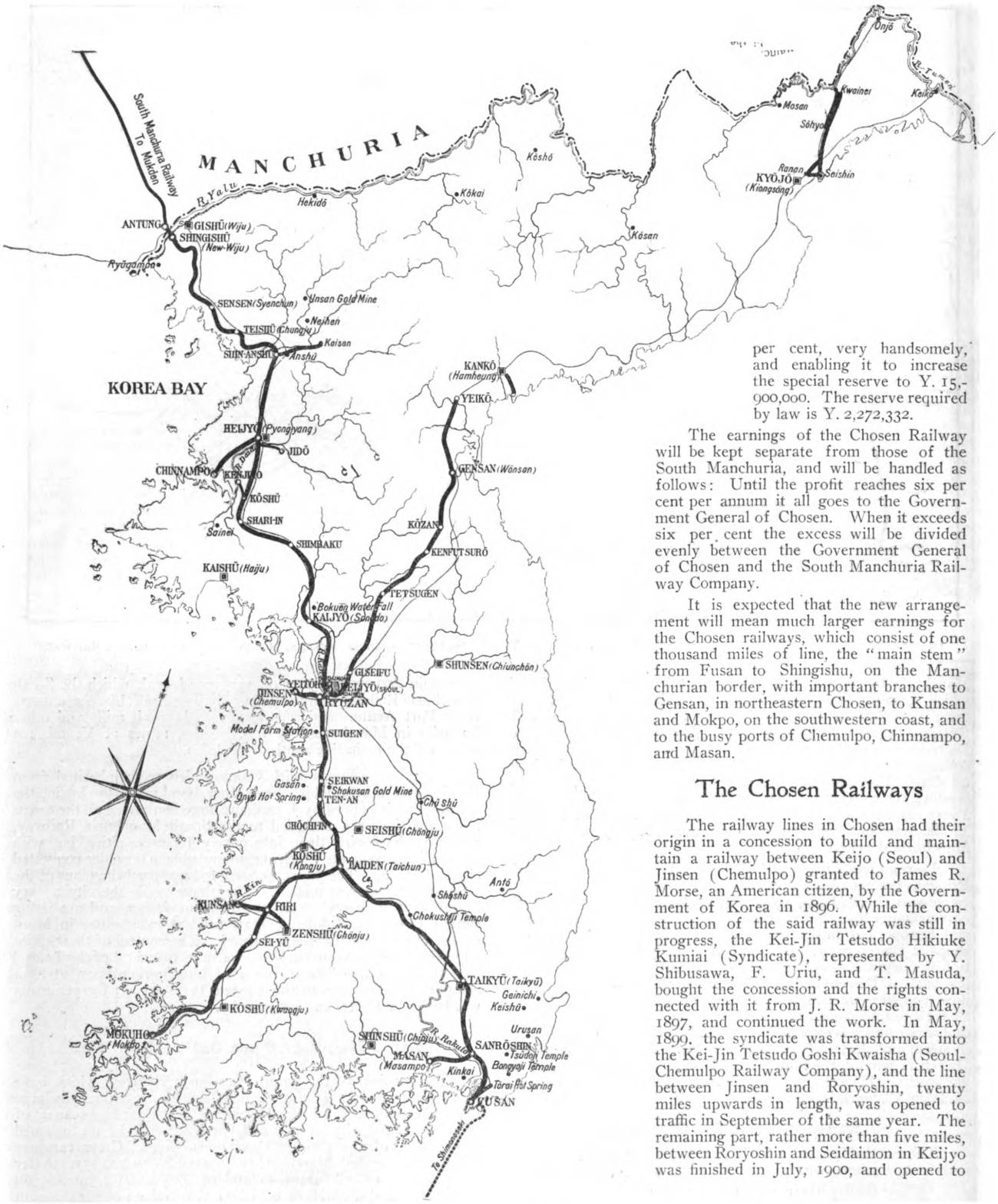
The South Manchuria Railway Company mines its own coal, mainly at Fushun, which is twenty-two miles east of Mukden. The Fushun mines, which were taken from the Russians, are said to contain 800,000,000 tons of very good coal, which the South Manchuria Railway Company not only uses itself, but also exports from Port Arthur, and sells locally to bean-oil mills and other factories in Manchuria. It has, besides, mines at Yentai, ten mines off the main line south of Mukden.

Under agreements with China which were inherited from Russia, and others which have since been made by Japan, the railway line is policed by Japan, and large sections of all the towns along the lines are conceded to the South Manchuria Railway, which is developing them into purely Japanese cities, but with modern improvements which are not possible in the older congested cities of Japan. The Japanese seem to have used the plans of the Russians at Dalny as models. They have made the city a very beautiful place, carrying out the Russian design, and are doing similar things at Mukden and twenty-one other cities in Manchuria outside the Leased Territory. The control of these cities will henceforth be vested in the Government General of the Leased Territory, and the differentiation of Manchuria proper, at least along the railway, from the Leased Territory on the peninsula will be less and less as time goes by.

Large Earnings Since Outbreak of War

The earnings of the South Manchuria Railway, which have steadily grown since its organization, have been exceptionally large since the outbreak of the European War, partly because of increased traffic with Russia, and partly because of the lessened competition of the Chinese Government lines. Gross earnings for the year ended March 31, 1917, were Y. 52,700,453. After the payment of all expenses and of Y. 5,862,954 interest on debentures, and the writing off of the year's share of the discount on the debentures, Y. 1,360,186, the company had a balance of Y. 10,107,697, covering the dividend to the Government at the rate of five per cent, and to other shareholders at the rate of eight

*These workshops were fully described in the February, 1918, issue of the FAR EASTERN REVIEW.



Korea and the Chosen Railways, Now Incorporated in the South Manchuria Railway System

per cent, very handsomely, and enabling it to increase the special reserve to Y. 15,900,000. The reserve required by law is Y. 2,272,332.

The earnings of the Chosen Railway will be kept separate from those of the South Manchuria, and will be handled as follows: Until the profit reaches six per cent per annum it all goes to the Government General of Chosen. When it exceeds six per cent the excess will be divided evenly between the Government General of Chosen and the South Manchuria Railway Company.

It is expected that the new arrangement will mean much larger earnings for the Chosen railways, which consist of one thousand miles of line, the "main stem" from Fusan to Shingishu, on the Manchurian border, with important branches to Gensan, in northeastern Chosen, to Kunsan and Mokpo, on the southwestern coast, and to the busy ports of Chemulpo, Chinnampo, and Masan.

The Chosen Railways

The railway lines in Chosen had their origin in a concession to build and maintain a railway between Keijo (Seoul) and Jinsen (Chemulpo) granted to James R. Morse, an American citizen, by the Government of Korea in 1896. While the construction of the said railway was still in progress, the Kei-Jin Tetsudo Hikiuke Kumiai (Syndicate), represented by Y. Shibusawa, F. Uriu, and T. Masuda, bought the concession and the rights connected with it from J. R. Morse in May, 1897, and continued the work. In May, 1899, the syndicate was transformed into the Kei-Jin Tetsudo Goshi Kwaisha (Seoul-Chemulpo Railway Company), and the line between Jinsen and Roryoshin, twenty miles upwards in length, was opened to traffic in September of the same year. The remaining part, rather more than five miles, between Roryoshin and Seidaimon in Keijyo was finished in July, 1900, and opened to

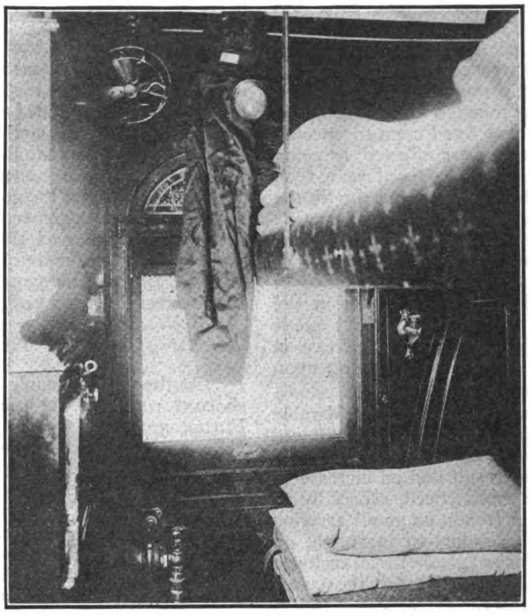
traffic, thus completing the railway between Jinsen and Keijyo.

The construction of the line between Keijyo and Fusan (Kei-Fu Line) was taken up in August, 1901, by the Kei-Fu Tetsudo Kabushiki Kwaisha (Seoul-Fusan Railway Company) under the terms of a treaty signed between Japan and Korea in August, 1894, as well as of a contract entered into between the Korean Government and the company in September, 1898, and the whole line, more than 267 miles long, was finished and opened to traffic in January, 1905, while the same company purchased the Kei-Jin Line in October, 1903.

The construction of the Kei-Gi (Keijyo-Shingishu) Line and the Masan Line was taken up by the Temporary Railway Department of the Army (Rinji Gunyo Tetsudo Kambu) in February, 1904, and the former was opened by March, 1906, and the latter by May, 1905, but neither of these lines were opened to general traffic until April, 1908.

When the nationalization of the railways in Japan was decided upon in 1906, the Imperial Government of Japan purchased first of all the Kei-Fu and Kei-Jin lines (293.6 miles), and the Railway Bureau of the Residency-General of Korea was established at the same time. In September of the same year the Kei-Gi (332.9 miles) and Masan (25 miles) lines were transferred to the superintendence of the Railway Bureau. The railways in Chosen came under the jurisdiction of the Imperial Government railways of Japan in December, 1909. In October, 1910, they were transferred to the jurisdiction of the Government-General of Chosen, and on July 31, 1917, the management was intrusted to the South Manchuria Railway Company.

The construction of the railways in Chosen was carried on very hurriedly, the object at the time being to connect the extreme south with the extreme north of the country as quickly as possible, and to connect a few of the important seaports with the trunk line by means of branches. Within a few years of completion, however, reconstruction of the lines was taken up and finished in due course, and, with the completion of the railway bridge over the river Yalu and the reconstruction of the Antung-Mukden Line, the railways in Chosen began to assume world-wide importance as a link in the communication system between Europe and Asia, by way of the South Manchuria and Chinese Eastern lines.



COMPARTMENT IN A SOUTH MANCHURIA RAILWAY SLEEPER

At the same time the Konan (Taiden-Mokuho), Kei-Gen (Keijo-Gensan), and Hei-Nan (Heijyo-Chinnampo) lines, 348.3 miles in total length, were finished, and 12.5 miles of Gensan-Bunsen section of the Kankyo Line (379 miles) was opened to general traffic, all for the development of the country.

In the fiscal year 1916, work on the Bunsen-Yeiko section of 21.4 miles and the Seishin-Sohyo section of 32.2 miles was carried on, while the total line from Seishin to Kwainei, 58.1 miles, was completed and opened to traffic on November 25, 1917.

Thus the railways in Chosen show practical simplicity as industrial lines, while, on the other hand, they offer the excellent accommodation required of them as part of the round-the-world communication system. The attainment of these two objects has always been kept in view and will be more so than ever in future.

Traffic Mileage

The total traffic mileage at the end of the fiscal year 1915 reached 1,006.5 miles, showing an increase of 368.6 miles when compared with that at the end of the fiscal year 1906, while at the end of 1917 it stood at 1,092 miles. The traffic mileage of each line is as follows:

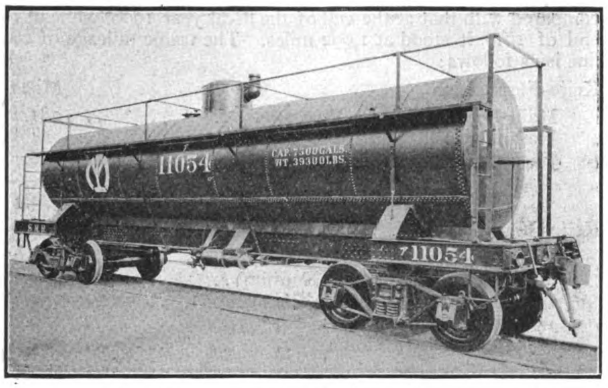
	Miles
Keijo-Fusan Line	
Main line (Seidaimon-Fusan)	281.2
Masan branch (Sanroshin-Masan)	24.8
Jinsen branch (Yeitoho-Jinsen)	18.4
Total	324.4
Keijo-Shingishu Line	
Main line (Ryuzan-Antung)	310.9
Kenjiho branch (Kwoshu-Kenjiho)	8.2
Chinnampo branch (Heijo-Chinnampo)	34.3
Jido branch (Heijo-Jido)	6.7
Shingishu freight branch	1.1
Total	361.2
Konan Line	
Main line (Taiden-Mokpo)	161.7
Kunsan branch (Riri-Kunsan)	14.3
Total	176.0
Keijo-Genzan Line	138.4
Kankyo Line	
Genzan-Yeiko section	33.9
Seishin-Kwainei section	58.1
Total	92.0
Grand total	1,092.0

The management of these railways was made over to the South Manchuria Railway Company on July 31, 1917, in order to make closer connection with the Manchurian railways. As a result of this change two through trains, between Fusan and Mukden, per day, for every class of passengers, have been added since November 1, 1917, while the Chosen-Manchuria express has been run as heretofore. Tourists have thus been saved the inconvenience of changing cars at Antung, and the Customs inspection there has been facilitated. Necessary investigations will be made by the company to further improve the through traffic service and realize the object of the unification of railway management in Chosen and Manchuria.

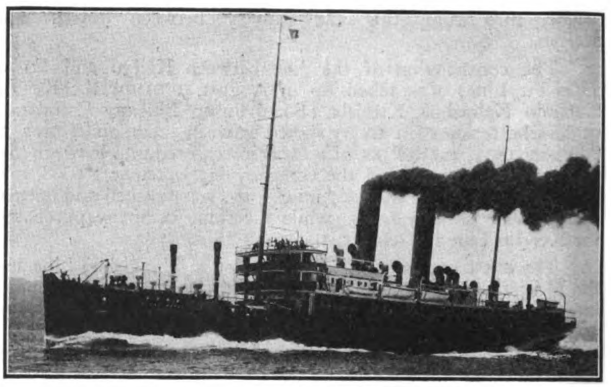
Everything possible has been done to add to the comfort of passengers and relieve the tediousness of travel, and also to give them all possible convenience. In April, 1908, dining cars were attached to day trains on the Kei-Fu and Kei-Gi lines, and a contract was made with a certain restaurant for service in them; but in 1913 the Railway Bureau took the service in the dining cars into their own hands. In the dining cars writing tables are fixed, and boards and men for Japanese chess, etc., are lent on request. Passenger conductors and waiters are in attendance on the express trains. Medicine cases are provided, too, on express trains for urgent necessity in case the stations where railway doctors are available are too far away. In the first and second class cars drinking water and motor fans are provided in summer, and steam radiators and stoves in winter. First and second class sleeping cars are also run on the Kei-Fu line, and all express trains on the Kei-Fu, Kei-Gi, and Kei-Jin lines are lighted by electricity.

Goods Traffic

The report for 1915 is the latest available. It shows that goods traffic of the railways developed gradually along with the increase in industries and the closer relation of trade between



TANK CAR ON THE SOUTH MANCHURIA RAILWAY



SOUTH MANCHURIA RAILWAY TURBINE SAKAKI MARU

Japan, Chosen, and Manchuria. There is no doubt that an increase of four per cent was made, both in quantity and receipts in goods traffic, when the result of the first fiscal year after the nationalization (1906) is compared with that of the previous year. In the next fiscal year (1907) the section for joint traffic was extended, and at the same time, the arrangements for through traffic were improved, transactions at Custom Houses were much simplified, recognized shippers were nominated at the principal stations, a system of rebate in freight was fixed upon to encourage shipping, and other new arrangements were effected, bringing about a still better result in the traffic. In the fiscal year 1906 the freight rate over the Masan branch line was reduced with the idea of encouraging shippers, and an increase in transportation resulted, notwithstanding the reaction in the economic world against financial expansion as an after effect of the war with Russia. Though no very fine results were to be obtained in the next fiscal year on account of still greater depression in the economic world, yet, in 1910, the transportation of general goods increased greatly in consequence of the more active condition in markets and the increase in industrial enterprises following upon annexation. This promising state contined in 1911.

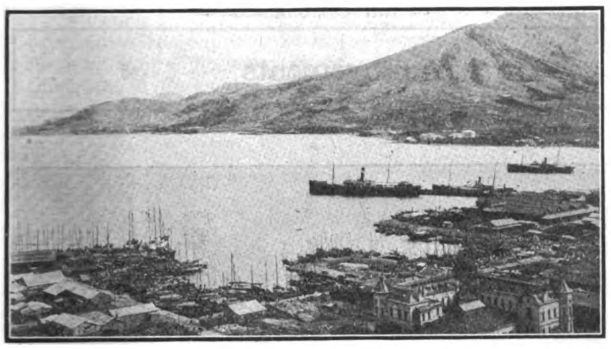
In July, 1912, revision in freight was made and a considerable reduction effected, the car consignment principle was put into practice, and the sections for reduction in rates for long distance transportation were extended, with the result that an increase in the quantity of goods transported was experienced, especially so after putting into practice reduction in freight on goods arriving at seaports by the end of the year. A reduction in freight on cotton cloth, cotton yarn, and other principal goods for Manchuria was effected in June, 1913, and this, with activity in the transportation of rice to Japan, contributed to the brightness in traffic. Though the opening of the Japan-Manchuria through goods traffic in January, 1913, encouraged much the exportation of rice and other grains to Manchuria and made the traffic bright, the economic condition again began to sink toward the end of the fiscal year. This state of things continued even in the fiscal year 1914. Moreover war breaking out in Europe more or less affected traffic, but on the other hand it caused an increase in goods for transportation, and, with the opening of the Kei-Gen Line to traffic, helped on the fair result obtained.

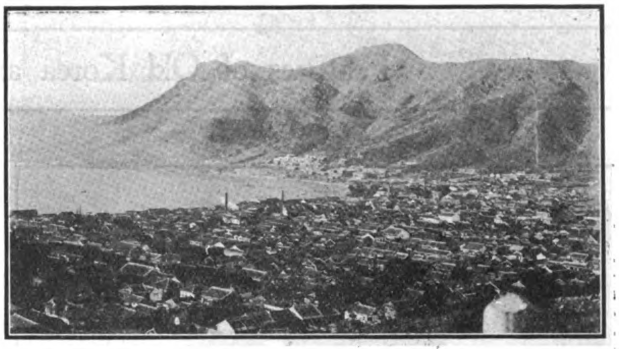
As the country began gradually to emerge from the depressed economic state of the fiscal year 1915, traffic, too, took on a brighter aspect. In such goods of large consignment as coal the transportation of Heijyo coal and that of Fushun coal brought into the country was brisk; the higher price of rice and other grain toward the harvest season induced a great quantity of grain to appear for transportation. The increase in mining enterprises brought about transportation of minerals, while timber and salt were transported in greater quantities. Especially must a conspicuous increase in the Japan-Manchuria through goods traffic be recorded. The tonnage of goods transported during the fiscal year was 1,656,640 tons and the receipts reached Y.3,358,200.

The necessity for the introduction of a proper arrangement in goods transportation was now felt by reason of the greater quantity of goods arriving for transportation, not only in Chosen itself but between Japan, Chosen, and Manchuria, as the result of economic development. Transportation in bond of goods arriving at Nandaimon, Taikyu, Heijyo, Shingishu, Chinnampo, Jinsen, Kunsan, and Mokuho was effected, and examination of these goods at Soryo was omitted. Especially since the reduction in freight on cotton cloth, cotton yarn, and other merchandise for Manchuria in June, 1913, did goods in transit conspicuously increase, and goods clerks were stationed at Antung so as to facilitate the examination and passing of goods through Antung Custom House. Moreover the arrangement for cancelling transportation, returning the goods, or changing the destination upon request of the consigner or holder of the order for delivery of goods was another of the conveniences added since December, 1912. Reduction in freight for grain destined to Fusan, Soryo, Kunsan, Jinsen, Chinnampo, Mokuho, and Gensan was also made for the encouragement of grain transportation.

Through Traffic

As the Chosen trunk line had become an intimate part of the shortest route in the round-the-world communication between Europe and Asia through the completion of the bridge over the Yalu and the reconstruction of the Antung-Mukden Line in 1911, the Railway Bureau expressed wish to join the Japan-Manchuria, Japan-Russia, and the Western European through traffic, and the conference opened at Petrograd in November, 1912, accepted the proposal to include the line in the web of passenger and goods through traffic. Passenger through traffic was started in May, 1913, and that of goods in January, 1914. As regards the three great routes of communication, that is, the international passenger communication via Siberia, the circular communication via Siberia and Suez, and the round-the-world communication via Siberia and Canada, the Bureau was recognized as having taken up the question of joining in these communications at the conference held at Berlin in June, 1912, and joining was decided upon at the conference opened at Moscow in June, 1913. Though the Chosen lines thus became part of the communication system with European countries, they were not yet in agreement for through traffic with China, the country in the closest relation with them. So we took up the question of opening through traffic, first of all with the Peking-Mukden Line, at the meeting of representatives of railways concerned opened at Tokyo in March, 1913, and acted upon it in October of the same year. The second conference was opened at Tokyo in March, 1914, and it was resolved that the through traffic system be extended to the Peking-Hankow, Peking-Kalgan, Tientsin-Pukow, and Shanghai-Nanking lines, which was effected in January, 1915, while the goods through traffic with the Changchung-Kirin Line came into effect in March of the same year. Tickets for the overland tour and the circular tour were put on sale in October of the same year at principal stations on the Chosen lines and those on the Imperial Government Railways of Japan, the South Manchuria Railway, and the Chinese Government railways, as well as at the principal ports visited by liners belonging to the Nippon Yusen Kaisha (Japan Mail Steamship





TWO VIEWS OF THE PORT OF FUSAN, THE GATEWAY TO KOREAN TRAVEL

Co.), and the Nisshin Kisen Kaisha (Japan-China Steamship Co.). This was another convenience afforded tourists between Japan and China. Besides the through transportation with the Imperial Government railways of Japan and the South Manchuria lines, which had already been carried on for some years, the establishment of the inquiry office at Shiba-ku, Tokyo, also helped to introduce the Chosen lines to the public and to encourage the passenger and goods traffic. Joint traffic with different steamship companies and light railways in Chosen, too, was agreed upon and put into practice to a greater extent every succeeding year.

Passenger Traffic

In the fiscal year 1914 a heavy decrease in passenger traffic was seen by reason of the great war that broke out in Europe. Though this depressed state of traffic continued even in the fiscal year 1915, the Industrial Exhibition, opened in Keijyo in the month of September in commemoration of the establishment of the Government-General in Chosen, brought a conspicuous increase in the number of passengers, and the passenger traffic continued bright even after the closing of the exhibition, showing 5,040,471 in passengers and Y.3,961,593 in passenger receipts for the year.

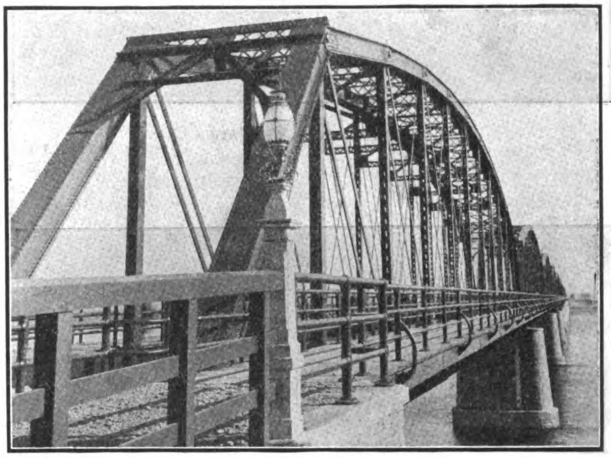
Through the rise in the standard of living among the Koreans and the spread of interest in travel among them, as well as the better understanding of affairs in Chosen, increase in tourist parties—Korean, Japanese, and foreign—was witnessed and all of them were given, to the utmost extent possible, special conveniences.

Warehousing

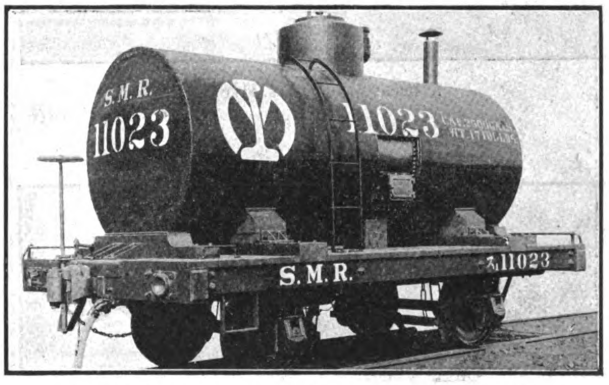
Warehousing has been undertaken at the principal stations since July 1, 1913, as additional work of the Government railway business. Since the inauguration of this enterprise shippers and merchants have been much benefited by being able to deposit their goods and obtain advances on them. There are at present twenty-five railway warehouses, located in twenty-four stations and aggregating 2,138 tsubo in total area. The principal products deposited are grains—which occupy more than 90% of the total amount—straw ropes, straw bags, straw mats, shirtings, cotton cloth, cotton thread, dried fish, etc.

Hotel Business

Hotels were opened by the Government railways for the benefit of foreign tourists. The Fusan and Shingishu hotels occupy the second floor of station buildings at both places, and the Chosen Hotel is situated at Hasegawa-cho, Keijo. All are worked on the latest foreign plan in every respect. The last one consists of a five-storied, fire-proof building laid out partly according to Oriental taste. The grounds include an inclosure originally called "Kwankyu-dan," in which the so-called "Temple of Heaven" stood in former days. Tourists will find there ample opportunity to study Oriental taste. A branch villa of the Chosen Hotel is opened at Kongo-san during every summer season for tourists visiting the mountain.



THE YALU RIVER BRIDGE WHICH LINKS THE KOREAN AND CHOSEN RAILWAYS

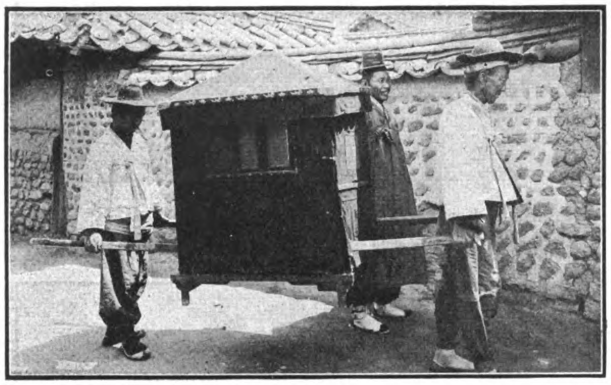


A SMALL TANK CAR ON THE SOUTH MANCHURIA RAILWAY

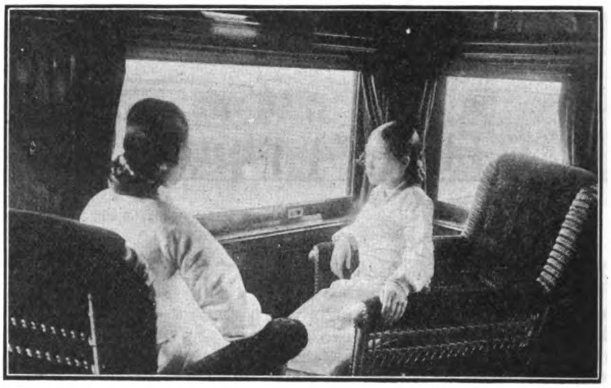
Construction Work

There are no new lines now in course of construction, though some of the earthwork and buildings on the Keijo-Genzan Line and part of the Kankyo Line already open to traffic, are as yet to be completed. The estimates of construction expenses of the remaining part of the Kankyo Line, about 280 miles from Yeiko to Yujo, is inserted in the Budget for the coming fiscal year. On the completion of the improvement work of the Keijo-Shingishu Line, that of the Keijo-Fusan Line was commenced.

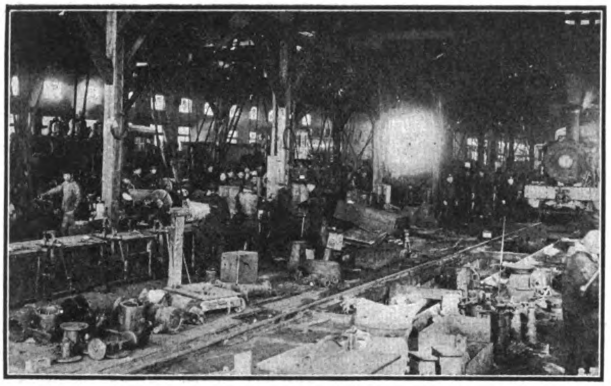
Features of Old Korea and Modern Improvements



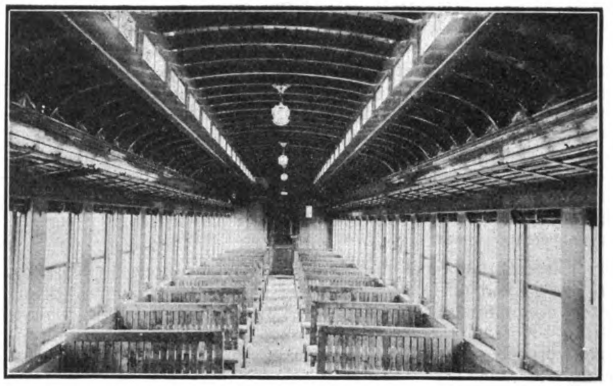
THE NATIVE KOREAN OBSERVATION CAR



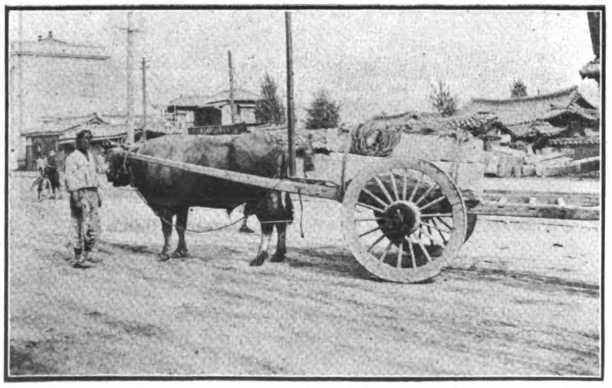
AND THE INNOVATION



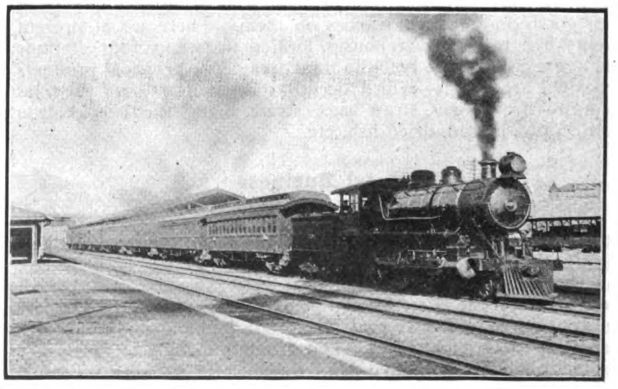
RAILWAY WORKSHOPS, HYUZAN



THIRD CLASS CARRIAGE, SOUTH MANCHURIA RAILWAY



NATIVE KOREAN TRANSPORT



ITS COMPETITOR, THE EXPRESS

The reconstruction of the Taikyu-Kinsen section and the Taiden-Fuko section has been finished and the Kinsen-Taiden section is expected to be reconstructed in the fiscal year 1918. Thus in the near future the improvement work of the main line from Shingishu to Fusan will be finished, making 1 in 100 the highest grade and 20 chains the shortest radius for curves along the whole line.

Rolling Stock

With regard to locomotives, ten wheel tender superheater locomotives weighing 112 tons each are the newest in use, and others are four kinds of tender engines, and three kinds of tank engines. All passenger cars are of four wheeled bogies of corridor style with steam heater, air brake, vestibule, electric lamps, electric fans, and other arrangements, and their capacity is 104 persons for the largest car. Besides, a special car with observation compartment, berths, dining room, and other accommodation, fitted up in great luxury, is reserved for distinguished guests. The wagons are of four wheel bogies, except for some six wheel bogies of fifty tons capacity and some four wheel wagons for use at the different works. Most of them are provided with air brakes or air pipes. The capacity of the wagons at the works is ten tons, while the others carry from twenty-two to twenty-six tons.

The rolling stock at the end of the fiscal year 1915 was 169 locomotives, 337 passenger cars, and 1,604 wagons.

Light Railways and Tramways

The light railways and tramways sanction and constructed during the old Korean administration, were transferred to the superintendence of the Government-General of Chosen in October, 1910; the lines open to traffic at the time reached only twenty miles, while a length of fifteen miles was still unopened. Before that time there was no law applying to these lines, so one was then issued concerning light railways in Chosen and supplementary laws were issued in June, 1913. Since the fiscal year 1914 an annual subsidy of six per cent has been allowed to companies planning to lay down and work light railways according to the law, so as to assist and encourage the development of the work.

At the end of the fiscal year 1915 the open lines reached a total mileage of 64.9 miles, while those not yet opened measured 144.4 miles. The results of traffic on these lines were very good, reaching Y. 445,348 in total receipts, while the expenditure was Y. 308,317, leaving a net profit of Y. 137,031 for the fiscal year.

Private lines already in operation reached 47.6 miles, while those not yet working, covered twenty-one miles at the end of the fiscal year.

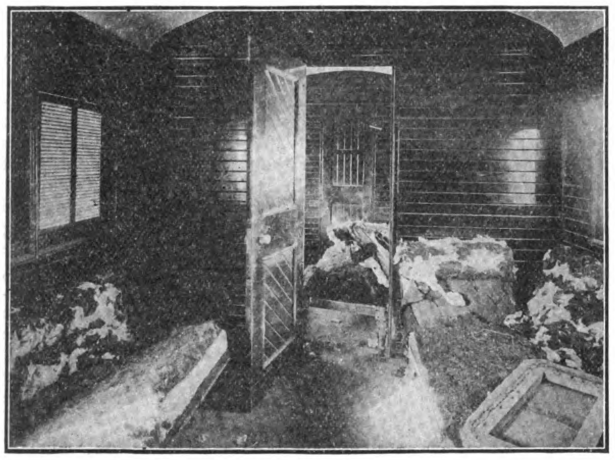
General Statistics *(Fiscal Year 1915)*

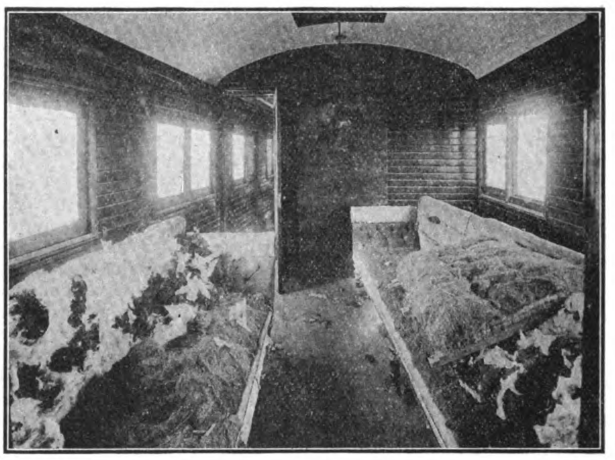
ITEM	NUMBER AND QUANTITY
Traffic Mileage	1,006.5 *m.*
LINES:	
Tracks	1,255.42 *m.*
Bridges	117,599 *ft.*
Tunnels	58,919
Buildings	125,228 *ts.*
Land	23,451,805
STATIONS, ETC:	
Stations	144
Roadside Stations	17
Goods Stations	1
Signal Stations	3
Information Office	1
Locomotive Sheds	16
Maintenance Stations	26
Hotels	4
Refreshment Room	1
Warehouses (Public)	20
WORKSHOPS	3
TRAFFIC:	
Train Mileage	3,544,297 *m.*
Carriage Mileage	11,706,728
Wagon Mileage	19,910,502
Passengers	5,040,471
Passenger Mileage	186,998,752 *m.*
Goods	1,656,640
Ton Mileage	179,945,269
Passenger Receipts	3,961,593 *yen*
Goods Receipts	3,356,200
Traffic Receipts	7,317,793
WORKING:	
Locomotive Mileage	4,427,380 *m.*
Converted Car Mileage	31,541,843
Coal Consumed for Running	206,900,070 *k.*
Oil Consumed for Running	88,500 *s.*
ROLLING STOCK:	
Locomotives	169
Carriages	337
Wagons	1,604
ELECTRICITY:	
Telegraph Stations	151
Messages	4,459,520
Lines	2,981 *Ri.*
Generating Stations	1
Current Generated	1,013,925 *kw.*
FINANCE:	
Capital Invested	139,020,584 *yen*
Traffic Receipts	8,934,430
Traffic Expenses	7,155,866
Profit	1,778,564
Value of Purchase	4,124,628
WORKING EXPENSES:	
Construction	5,126,946
Improvement	2,491,131
Extraordinary	261,253
Maintenance	2,317,783
Additional	125,103
STORES:	
Profit	6,023,945
Loss	6,023,822
Balance	123
OFFICIALS AND EMPLOYEES:	
Number	9,234
Monthly Pay Roll	238,098 *yen*
RELIEF ASSOCIATION:	
Members	8,430
Cases Relieved	2,186
Receipts: Grants from Government	40,343 *yen*
Receipts: Contributions from Members	58,035
Receipts: Interest on Deposit	15,673
Receipts: Miscellaneous	
Receipts: TOTAL	114,051
Disbursements	47,644

Ts.=tsubo; K.=kin; S.=sho; 1 Yen=100 Sen; 1 Sen=10 Rin; 1 Rin=10 Mo; (no currency under half sen now).

China's Railways and the Soldier Pest

In China the civil communities and the commercial enterprises upon which their existence depends, exist in spite of the constituted "guardians of law and order" and not by virtue of any protection, or favor, or service which these same "guardians" afford them. The Chinese army, for instance, is the cruelest incubus which the Chinese people have to carry on their exceedingly painful forward march. Its uselessness as a national force is even outdone by its deliberate cruelty and destructiveness. The country road over which a Chinese army passes on a mission for some gambling Chinese politician is inevitably marked by dismantled inns, charred villages, and funeral processions. The railway car that has been occupied by Chinese soldiers on a single journey is good for nothing but junk. The Chinese Minister of Communications and the Chinese Minister of War sit in the same Cabinet in Peking, exchange pleasantries, drink tea together, and conspire together in the great political game, but it has never occurred to the one to complain to the other that the Chinese army is making railway administration a trial and a tribulation for every officer connected with the Government railways, from the car boys to the managing directors, and that it is also making travel so wholly uncomfortable and distasteful to the traveling public, both Chinese and foreign, that no one who can afford the time to travel short distances on foot or on horseback or who can go on long journeys by roundabout routes by steamer will trust his health and his temper to the keeping of the Government railways.





Two Views of the Interior of a First Class Railway Car, Which Was Occupied and Ruined by Soldiers Who Traveled from Peking to Hankow

China has many competent men in the Government service who are both able and eager to run her railways and run them well. But these discouraged enthusiasts have no authority over the bemedaled braggart, who sets out on a campaign of mingled bluff and destruction by seizing all the first class carriages on a line and filling them full of verminous, malicious, uncontrolled coolies, and ends by occupying all available tracks and sidings on a busy main line with his cargo of incorporate deviltry and refusing to move for three or four weeks while he sends some hundreds of telegrams in all directions explaining why he is not fighting, under what peculiar conditions he will consider fighting, and finally announcing—what every one knew all along—that he will not attempt to fight at all. The director of one important line, who had the Military Governor of a province to deal with under precisely these circumstances, tried to keep his line open by building new sidings and cut-offs around the stationary troop trains of the bellicose official who was supposed to be at war. Every time he built a new bit of track, however, a new troop train ran onto it and refused to move, and it was finally announced that the line was closed. Commerce and travel therefore ceased while the fat general's retainers proceeded to tear the furnishings and woodwork out of the trains they were occupying to cook their food.

The Tientsin-Pukow line, originally well-built, well-furnished, and still as well-managed as conditions will permit, has become notorious for the inconveniences that arise from the constant use of the line by soldiers. It is not only that the commanders are constantly moving troops and delaying traffic; the greatest annoyance is the constant use of any and every train by the common riff-raff of the so-called army who camp in the dining cars and in the first and second class coaches, monopolize all comforts without even paying their fare, and make comfort and sanitation for all other travelers wholly impossible by their filthy and destructive habits. The old center of annoyance used to be Hsuchowfu, in northern Kiangsu province, which was for several years the headquarters of the notorious Chang Hsun and his "pig-tailed army." The nuisance has now spread, however, to both Tsinanfu and Pengpu, the headquarters of Chang Huai-chih and Ni Shih-chung respectively, and conditions are so bad that the line is avoided by every one who can travel by another route. The efforts made by the railway management and servants to keep up appearances and service under these conditions are truly pathetic. A train runs along on time and has a good chance of making scheduled connections. It reaches Hsuchowfu and on the platform there appears a beplumed and gilded general who announces that he wishes to have a conversation with some other general or politician of standing on board the train. Everything is held up accordingly. The talkative general and his friend ensconce themselves in a first class compartment and absorb tea and political gossip for two or three hours while a ragged squad of coolie soldiers, under a coolie officer, guard the engine and the station master's office and see that no attempt is made to move the train. About the time then that a start is made fifty or a hundred bandoliered ruffians of the local army, who are moved to ride somewhere on an excursion, clamber into the dining car, sprawl over the tables, stack their rifles in the aisles, and proceed to spit upon every square inch of floor and wall space that is within range.

The Peking-Mukden line has usually been fairly free from these visitations, but now the ex-bandit Chang Tso-lin, present

Governor of Fengtien, has set the fashion of commandeering cars and monopolizing traffic on this line also, and there is no reason to believe that the precedent once established will be abandoned.

One of China's greatest problems is the reduction in number and the control of its armed coolie hordes, recruited to give an air of realism to the absurd burlesque warfare carried on to the great cost of all classes of the Chinese people by self-seeking militarists and politicians. Instead of attempting to solve this problem, however, it is being aggravated by the daily enlistment of fresh forces from the outlaw classes of every community in the maritime provinces. Three railways are monopolized by the utterly worthless and malicious forces of ambitious tin-pot officials, and the upper Yangtze is closed to steamers, both native and foreign, because the coolie marksmen of all forces insist upon using everything that steams past as a target in their rifle practice.

These conditions are not only indices of the breakdown of authority and control within the country, but insofar as they affect foreign residents in China and foreign trade, they also indicate a loss of a sense of responsibility on the part of all the political leaders and an indifference to consequences. Every Chinese knows from experience that an aggravation of these conditions, which result in the loss of foreign trade, of the property of foreign traders, and of foreign life in some cases, will eventually result in foreign intervention, possibly in retaliation at the cost of much national prestige and of national funds. During the Revolution of 1911 the rights of outsiders and the sanctity of their persons were scrupulously borne in mind by the warring factions. For rights and persons no consideration whatever is now shown on either side, simply because no individual military or political leader is responsible to the nominal government in Peking and because he does not care what afflictions or indignities are visited upon the unhappy persons who are adorned with executive titles, if not with executive powers, so long as he attains his own petty and selfish objective. These are the conditions which put the severest strain upon the optimism of China's well-wishers.

The Orient's Finances in 1917

At the yearly meeting of the Hongkong and Shanghai Banking Corporation, held in Hongkong, February 23, Chairman of the Court of Directors S. H. Dodwell read a report which has been reprinted in most of the journals on the China Coast to the extent of about six and a half columns. The length of this document and the misleading implication in the headlines that it was simply a corporation report probably drove many busy people who were skimming the pages for light and easily digested mental pabulum back to the presidential mandates in despair. Those who had the courage and persistence to read through the opening paragraphs on the bank's own business undoubtedly read to the end and then congratulated themselves upon having discovered a perfectly human and a remarkably interesting review for 1917 of everything vital in finance, trade, and politics in the Orient, masquerading in the dismal guise of a bank report.

Mr. Dodwell's statement is a very simple and concise reference work in a few columns upon half a dozen topics which are of intense interest to every one with an eye upon the East. He begins with the bank, drifts from that, after exhausting it, into the international money market and then goes into exchange, making that bewildering subject clearer and more interesting in two paragraphs than the average banker would in a book. Equally short and pointed reviews follow upon Chinese trade, shipping generally, Japan's foreign trade, China's declaraton of war and important political events, finance, the Maritime Customs and the Salt Gabelle, China's financial status and prospects, currency reform, war charities, the war generally, and America's participation taken in conjunction with Russia's defection. Its length precludes the quotation of the report in full, most of the figures quoted are obtainable elsewhere, and the bank's returns for the year have already been reproduced, but there are a few illuminating paragraphs of general interest which are worth quoting. The following explanation of the fluctuation of silver, for instance, will bring the lay mind as near to comprehension of this baffling subject as anything can:

"It was not to be expected that silver should escape the effect of the general rise in prices arising from the inflation of credit, based on the enormous increase in the fiduciary note issues of all the belligerent nations and to the urgent and insistent demand for the raw materials of silver-using countries, especially India. During the year the silver quotation has ranged from 35 11-16d in March to 55d in September—a variation of 19 5-16d per ounce. From 36d per ounce in January the price rose until in September it culminated in a quotation of 55d. At that price the silver content of the rupee in India, of the dollar in the Straits Settlements, and of the yen in Japan was in excess of the parity of the gold exchange standard of these several countries. It would have paid to melt the coins and sell them as bullion. It became necessary for these countries to take legislative action to protect their respective currencies, and, accordingly, the export of silver, under license, has been prohibited in India, Japan, the Straits, and Siam, as well as in Great Britain and the United States. The immediate danger has been averted.

"The fall in the price of silver was even more rapid and sensational than the rise. From September 25, when the highest point was reached, the price fell 6d in four days. Wide fluctuations followed in the succeeding month, a rise of 3d on October 30, making the largest rise recorded in any one day since 1893. The general trend, however, has been towards a lower level of price. The year closed with the quotation at 43½d.

"The amount of silver imported into China during 1917 was 23,000,000-oz; while 54,750,000-oz. were exported, resulting in a reduction of the stock in the country by 31,750,000-oz. However, provided there is no considerable export of silver from China in the near future, present indications do not point to large imports of the metal being necessary. The China exchanges, although generally at a discreet interval, have, *nolens volens*, followed these erratic and sudden fluctuations in silver."

Of Japan's prosperity Mr. Dodwell says:

"The foreign trade of Japan for 1917 exceeded all previous records and shows an excess of exports over imports of Y.589,923,000, or Y.203,713,000 more than at the corresponding period of the previous year. The total figures are: Exports, Y.1,683,780,000; and imports, Y. 1,093,857,000—being increases of 42 per cent and 37 per cent, respectively, while the combined figures show an expansion of 40 per cent, or Y.798 millions. The great preponderance of exports over imports and the free gold market in the United States during the first nine months of the year resulted in a phenomenal increase in the amount of specie at the disposal of the nation, which now totals Y.1,120 million, or Y.411 million greater than a year ago, about half being held at home and half abroad. The prosperous condition of the country has enabled Japan to repay a portion of her foreign debt, make substantial loans to the Allies, and to borrow on advantageous terms for the development and improvement of her railways and other works of public utility."

China's financial status is sketched as follows:

"From a financial point of view the past year was even a more prosperous one for China than its predecessor. The total Maritime Customs collection for 1917 was Haikwan Tls. 38,177,000, equivalent, at the average rate of exchange of 4/3 13-16d, to £8,241,857, as against a collection for the previous year of Haikwan Tls. 37,764.000, equivalent, at the average rate of exchange of 3/3 13-16d, to £6,264,496. Considering the handicap imposed upon China trade by adverse war conditions

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

Work on Manseibashi "L."—The work of connecting Tokyo Station and Manseibashi Station by an elevated railroad is nearing completion and it is expected that the cars will be running on this track by next September. The full connection with Uyeno station may take some years. The construction has been considerably delayed by the war and the difficulty of obtaining shipments of the necessary materials. A new station is to be built at Kajimachi near the Bank of Japan.

Kinhan Bulletin.—Dr. C. C. Wong of the Peking-Hankow Railway is publishing a daily news sheet in which all affairs concerning the said line are printed for the information of the railway officials and employees.

Bolshevik Appointee for Chinese Eastern Railway.—The Chinese Eastern Railway was notified by the Bolshevik Government of the appointment of M. Gucha(?) to be Special Executive Officer of the Chinese Eastern Railway under date of February 20, and the public institutions in the Chinese Eastern Railway area and the servants of the railway were instructed to abide by his order on his arrival at Harbin.

M. Gucha was a private attached to the Railway Guard Brigade and later served as a clerk at the Harbin Station.

Siamese Railway Dividends. — The general meeting of the shareholders in the Paknam Railway Co., Ltd., took place on Friday, March 15. It was proposed to pay a final dividend of six per cent, making a total of 22 per cent for the year 1917, which is probably the largest ever paid on the present capital of the company.

No Siberian Mails.—Notice of the closing of the Siberian Mail route has been given by Mr. W. W. Ritchie, Postal Commissioner. It is announced that the Trans-Siberian Railway is no longer available for mails to Europe, Mongolia, and Sinkiang. Hereafter European mail will go by sea, Sinkiang mail via Kansu, and Mongolian mail by way of Kalgan.

South Manchuria Railway Traffic Returns.—The South Manchuria Railway Traffic returns for the month of January give the daily average of Y.121,323.70, being an increase by Y.37,219.66 on the corresponding month of last year, the particulars being as under:

Receipts	
Passenger	Y. 862,780.38
Goods	2,711,742.04
Warehouse	47,362.70
Miscellaneous	139,149.45
Total	Y.3,761,034.57
Increase on corresponding month last year	Y.1,153,809.38

In December last the Main Line figures showed a decrease by Y.39,871 and the Mukden-Antung figures an increase by Y.60,773. In the month of January, the total increase on the preceding year reached Y.1,153,809 at a bound, which figures may be considered as very remarkable.

The aggregate traffic earnings from the beginning of the current fiscal year amounted to Y.27,292,767, being an increase by Y.5,787,175.

Amur Track Destroyed.—A telegram from a reliable source received at Changchun says that near Karimskaya, where the Amur Railway starts at about one hundred versts east of Chita on the Trans-Baikal Railway, the railway track has been destroyed.

On this account half the United States Railway Mission to Russia has had to be kept back.

SHIPPING

Siam's Enemy Ships.—Siam has allotted to the Allies the enemy ships seized when she declared war. The Yiam Samudh (ex Trautenfels) has already been lost according to a telegram the *Times* published recently.

Den Samudh (Deli), 726 tons, Siam. Pin Samudh (Samsen), 998 tons, Siam. Phan Samudh (Pitsanuloke), 1,267 tons, France. Thong Samudh (Patani), 1,086 tons, France. Yiam Samudh (Trautenfels), 2,932 tons, Great Britain. Laen Samudh (Landrastchieff), 1,012 tons, the United States. Kaeo Samudh (Petchaburi), 1,373 tons, the United States. Sri Samudh (Kohsi-Chang), 1,292 tons, Italy. Doen Samudh (Chiengmai), 1,080 tons, Italy.

New Honto Harbor.—A new harbor will be constructed at Honto on the western coast of Karafuto. The estimate for the work requiring Y.2,500,000 was passed by the Diet in 1916. The work will be completed in nine years, when Honto will be the only port in the island to be free of ice.

Cotabato P. I. First-Class Port.—A large dredge from the Bureau of Public Works in Manila is now en route to Cotabato. The mud bar at the mouth of the Rio Grande de Cotabato is to be cut out and the river channel dredged to a sufficient depth to permit the entrance of the large interisland vessels and their docking at the Cotabato wharf five miles up the river. This will put Cotabato back on the transportation map as a first-class port.

The mud taken from the river in dredging is to be used in raising the level of the town, especially the sites set apart for Government buildings. Cotabato is destined to be the most important port in Mindanao at a not very distant date and the dredging of the river will greatly aid its development.

FINANCE

China's Native Customs.—As a preparatory measure for the abolishment of likin (China's internal transportation tax) the Ministry of Finance has almost completed a survey of last year's actual returns. According to the figures, the provinces heard from contributed as follows: Chihli, Tls. 325,000 (one tael was equivalent to $.79 gold); Shantung, Tls. 2,380,000; Honan, Tls. 2,690,000; Shansi, Tls. 3,219,000; Kiangsu, Tls. 3,112,000; Anhwei, Tls. 1,617,000; Chekiang, Tls. 3,617,000; Kiangsi, Tls. 2,311,000; Hupeh, Tls. 3,140,000; Hunan, Tls. 1,712,000; Shensi, Tls. 718,000; Kansu, Tls. 810,000; Fengtien, Tls. 2,514,000; and Heilungkiang, Tls. 10,000.

The abolition of likin will relieve the great strain felt by native industries in transporting their products, and China expects to recoup her loss in revenue by increasing import tariff, negotiations about which are now proceeding with foreign nations.

Kwantung Government Budget.—A supplementary estimate of the Local Administration Account for the fiscal year has been announced as under:

Receipts (Ordinary)	
Local receipts (Miscellaneous)	Y.408,513
Disbursements	
a) Ordinary	
Encouragement of industrial enterprises	16,878
Exchanges Y.8,719	
Investigations 8,159	
Sanitary	17,387
Hospitals	8,302
Women's Hospitals Y. 687	
Isolation Hospitals 1,000	
Epidemic prevention 7,398	
Construction and repairing (for slaughterhouses	670
Operating expenses	49,974
Total	Y.84,909
b) Extraordinary	
Repairing and public works	Y. 69,230
Encouragement of industrial enterprises	242,374
Grants	12,000
Total	Y.323,604
Grand total	408,513

Under the head of the "Encouragement of industrial enterprises" are included funds for the South Manchuria Sugar Refining Co., the tussah silk manufacture, etc.

Hokkaido Company Gets Capital.—The Hokkaido Tanko Kisen Kaisha declared dividends of 8 per cent per annum at a semi-annual meeting of shareholders. It was decided at the same time to invest Y.4,000,000 more in the Hokkaido Steel Works, which the company supports in conjunction with the Mitsui Company. The Hokkaido Steel Works, with an increase of Y.8,000,000 in its capital, will enlarge its plant at Wanishi and try to turn out more of steel materials for the Nippon Steel Works at Muroran and other steel users.

MINES

Kweichow Coal and Steel.—Two fresh enterprises have been commenced in Hingi—coal and steel businesses. A new bituminous coal business has opened at Sa-u, in the district; and the product is brought on the street

Provincial Bank Notes

The last problem which the Government and the Bank of China would be called upon to consider in standardizing the currency would be the withdrawal of the provincial bank notes, and this should not be undertaken until the standardization of the dollar had passed through the three phases which have been outlined. The total withdrawal of these notes should be left until the bank had a sufficiently large note issue to warrant substituting for them at least 70 per cent Bank of China notes and 30 per cent silver. The market value of the provincial notes now in circulation is estimated at more than $100 million, so that the withdrawal of all these notes *en bloc* would cost $30 million in silver.

The leveling up of rates and the introduction of the standard dollar, which would include one third of the minting charges on reminted coins, the establishment of a central mint, and transportation charges, would probably come to $10 million. The improvement of small coin values might cost another $10 million, and the withdrawal of provincial bank notes, as estimated above, would cost $30 million. The total cost then for carrying out a scheme of internal currency reform would be about $50 million. To cover this no part of the silver reserve of the Bank of China could be made available, as this would be drawn upon to the extent of $70 million in the withdrawal of the provincial notes. It would probably be necessary therefore to arrange for a loan in the last phase of the standardization of the dollar.

One step that would be most essential to the success of this scheme would be the closing of all provincial mints and the establishment of a central mint under the absolute and direct control of the Ministry of Finance. The mint should offer to accept silver in any form, except bars, for reminting, and should charge a fixed rate based upon the extra amount charged in the table of equivalents as proportion of minting charges, say one third. This would mean that the Chinese people could have standard dollars minted at one third of the actual cost. The charge could of course be increased to the actual cost whenever the amount of standard dollars in circulation was deemed sufficient for the needs of the country. The mint should not in any event be allowed to make a profit.

With regard to the right of issuing notes, the Bank of China should be the only institution permitted to issue notes, and a law should be passed during the second phase in the development of the standardization scheme prohibiting the issue of notes by any other institution. The Bank should be given the right to issue up to say $300 million free of taxation, above which figure issues could be taxed according to a progressive scale.

The Railway Administration of China

Trying to fit square pegs into round holes is at best a profitless occupation. Yet this has been the kind of pastime in which Chinese administrators have been prone to indulge when they selected friends for positions for which they were utterly unsuited. While this reproach may to some extent be still deserved, there are indications that the conditions which provoke it are being changed. The beginnings of reform are already noticeable, particularly in railway administration. Tsao Ju-lin, the Minister of Communications, is not without his critics. Indeed, who is? But whatever his limitations may be, it must be conceded that he could hardly have made a better selection of men to administer the several railways of this country than he has done, and credit must be given to him for placing efficiency before nepotism. To prove this it is only necessary to make mention of the names of the men to whom railway management has been intrusted.

Yeh Kung-cho, the Vice Minister, has practically a lifelong experience in railway work. Starting his career as senior clerk in the Railway Administration of the Ching Dynasty, he worked his way upwards by sheer ability. Such was the confidence reposed in him by his superiors in office that they intrusted to him the drafting of nearly all the railway agreements which have been entered into during the past decade, and, although he has not had the benefit of a foreign education, he has acquired an experience which is extremely valuable to his country. He certainly knows how to utilize men to the best advantage, and his selection or endorsement of the many Western-trained men for the practical work of railway administration must commend itself to fair-minded critics. Mr. Kwan Kang-lin, the present Director of the Railway Department, was for many years the Managing Director of the Peking-Hankow Line and was a close associate of the Vice Minister during the Ching Dynasty in the Imperial Railway Administration. He has acquired a technical knowledge and a rich experience which are of considerable value.

Take the Peking-Hankow Line. At its head is Dr. C. C. Wang, a man who undoubtedly has the confidence of foreigners. He graduated as a civil engineer and obtained his doctor's degree in railway administration. There is no need to draw attention to his qualifications. They are universally recognized. Associated with him in the directorship is Mr. Shui Chun-shao, also a foreign-educated student, who studied engineering in France, and who has been connected with the railway for many years.

In charge of the Peking-Mukden Line is Mr. Shu Ting-cho, another product of American universities, who has been associate managing director for five years. His ability is unquestioned.

On the Tientsin-Pukow Railway there is at the head of affairs, Mr. Hsu Shih-chang, a brother of the ex-premier. After completing his engineering studies in France, he was made managing director of the Lunghai Railway, and has proved himself a man well qualified for the higher appointments.

Another well-known figure in railway circles is Mr. K. Y. Kwong, chief engineer of the northern section of the Tsin-pu Railway, who has been connected with railway work for nearly thirty years. He was associated with Mr. Jeme Tien-yu, who has the honor of being the first Chinese to undertake successfully the construction of a railway, the Peking-Kalgan Line.

General Tinge, at the head of the Peking-Suiyuan Railway, is an English graduate, being a classmate of Mr. Barton, the Chinese secretary of the British Legation. He also is well experienced in railway work.

On the Shanghai-Nanking Railway is Mr. C. P. Yin, a graduate from America, whose studies have qualified him for the responsible position of Managing Director. Previously he was technical expert of the Railway Department of the Ministry. The foregoing notes are perhaps sufficient to indicate the caliber of the directors who at present control the several railways of China. They are men who have made some study of their business, and have been appointed for their qualifications and not because of personal influence. It should be added that all the men mentioned speak one or more European languages. In conclusion we may quote the opinion of a Shanghai journal, which, in the course of an article on China's railways, remarks: "China's 6,467 miles of railways are in most cases profitably and efficiently operated, when it is considered that China has known modern railroad operation not longer than a quarter of a century. The directors and managers of the Chinese Government railroads are foreign educated and in general understand their business."

Railway Car Conservation in China

Shipping Rules Effect Large Economies

[By John Earl Baker, Adviser, Ministry of Communications, Peking]

It was a celebrated railway official who phrased the maxim, "First load your cars, then load your trains." This maxim is merely a more terse mode of saying that operating efficiency is to be gained by obtaining the maximum possible load for each wagon, and by placing the maximum possible number of wagons into each train. To be sure, the maximum loading of cars and trains will not of itself insure the profitableness of a railway, for maintenance of way and of equipment, together with supervision require an expenditure larger than that of actually hauling the traffic. But in China, nearly a third of operating expense is to be found in the Running department, and hence this department offers considerable latitude for attempts to save. In countries where the art of organization has been well mastered and traffic is dense, it is in the running department chiefly that economies are studied most diligently.

Goods wagons are classed as "rolling stock" but every experienced railroad man knows that a wagon stands still much longer than it rolls. Wagons are designed to roll under a load of goods, but when actually in motion they are absolutely empty about one third of the time; and in many countries they are more than half empty much of the loaded time. To keep all cars in motion all the time with all the load each can carry is manifestly an ideal impossible of attainment, but it is the star toward which a railway manager directs his course. The Chinese Government Railways, taken as a system, are making a remarkable record in securing service from their goods wagons. So much is it the fashion to disparage Chinese methods that it is a pleasure to call attention to this fact.

To guage the degree of managerial success in car handling, various measuring sticks are used, either singly or in combination. One combination is the average number of tons per loaded car used in conjunction with the average number of miles run per car per day. The larger the number of tons put into each car and the further each load runs each day, the fewer the number of cars required to carry a given volume of business each year. The logical sequence is a lower investment in cars, less dead weight of cars to be hauled, hence fewer locomotives required to haul a given weight of goods, a saving in repairs, in fuel, in trainmen's and enginemen's wages, and hence a more economical operation generally. But on Chinese railways, neither car mileage nor car loading statistics are compiled.

Another measure is an average number which combines the two elements just mentioned—load and distance—being expressed as ton miles or ton kilometers. As the kilometer is the unit of distance adopted by the Ministry of Communications, the ton-kilometer is the term to be employed in China. However, ton-kilometers per car would be a very inaccurate measure in China, for freight cars vary all the way from a ten ton four wheel truck to a forty ton eight wheel wagon. Hence to eliminate this irregularity, ton-kilometers per ton of carrying capacity is used. Such statistics are available. As required by the annual report to the Ministry of Communications, each line has inventoried its goods wagons and stated their aggregate capacity. The tonnage of goods from each station to every other station on a given line is recorded and the resulting kilometrage is computed.

On December 31, 1915, the aggregate capacity of all wagons on the 5,444 kilometers of Government railway was 243,070 tons. During that year approximately 2,376,252,000 ton-kilometers of transportation was produced. Dividing the number of ton-kilometers by the number of tons of carrying capacity gives a quotient in this case of 9,776 ton-kilometers produced by each ton of carrying capacity. An absolute number of this sort means nothing to most people, but in comparison with another it may become very significant. We are accustomed to look to America for record breaking performances in connection with railway operation. Hence comparison with the American performance should be enlightening. But what do we find? The latest figures readily available here are for the year 1913. In that year the 86,978,145 tons of car capacity in America produced 301,398,752,000 ton miles—an average of 3,465 ton miles, or 5,576 ton kilometers per ton of car capacity. Compared on this basis, the Chinese performance is not only better than the American but surpasses it by fully three fourths—75 per cent. A recent news item states that "Railroad car efficiency in the United States increased eight per cent in 1916 over 1913, the best previous year." But this improvement which probably has been even bettered during the crucial year just past, falls far short of the Chinese record.

Another basis of comparison makes the disparity even more remarkable. If the total number of tons hauled be divided by the aggregate capacity of wagons, the Chinese record is sixty-five tons hauled per ton of carrying capacity during the year, while the American performance is twenty-four. On this basis, the Chinese car does over two and a half times as much work as the American car. What would it not be worth to America in the midst of her "meatless, sweetless, and heatless" days to double the work done by her freight cars?

Now, which is the fairer basis of comparison, "ton-kilometers" per ton of car capacity or "tons carried" per ton of car capacity? That depends much on how you look at it. Of course, ton-kilometers is the measure of actual work done by the car in a mechanical sense. Yet, in some ways, "tons carried" reflects more accurately the work done by managers and the good or bad effect of rules and other circumstances under which the work is done. This is made apparent by the considerations given in the following paragraph.

The "ton-kilometer" basis differs in result from the "tons carried" basis because of the difference in the average haul per ton. If the average haul per ton were the same in both countries, one basis of comparison would give the same result as the other. But the average American ton is hauled 236 kilometers while the average Chinese ton is hauled only 141 kilometers. It is manifestly unfair to the American car to hold rigidly to the "tons carried" basis, for the American car hauls each ton 95 kilometers—nearly sixty miles—farther than does the Chinese car. Yet, after a car is loaded and on its way, it does not take long to run sixty miles—not more than four or five hours. As stated above, the American car hauls only twenty-four tons of goods per ton of carrying capacity during the year. This means that for the average car to obtain a capacity load, carry it to destination, be emptied, and get to its next load, requires in the United States fully fifteen days. In China, the round is completed in five and one half days. There is a margin of nine and one half days between the two records, of which only a few hours is accounted for by the longer haul of the American shipment. That longer haul, however, is enough longer to encounter an intermediate terminal. We know that in such terminals delays of several days are often suffered. On the other hand, terminal delays are sometimes cut down to less than one hour. Any delay of more than one day to a loaded car is grounds for an inquiry. Hence, two days allowed for the longer haul in America should be sufficient to put the two services on a parity. If you consider the American haul shortened to agree

with the Chinese, then the American car to move from one full load to another requires thirteen days compared with five and a half by the Chinese car. If you consider the Chinese haul lengthened to agree with the American haul, then the comparison is seven and one half against fifteen. Taken either way, the *transportation* service rendered per unit in China is double that rendered similarly in America. Taken just as it stands, the achievement is a source of pride.

It would be very pleasant, indeed, to hand the entire credit for this result to the officers of the Chinese lines. Yet, however deserving they may be, the disparity between the Chinese and the American record is too great to be explained by a mere supriority in personnel. The attempt at such a compliment would be sure to fail.

The better record made by the Chinese car is made possible by several causes independent of the quality of the supervisions. One of these influences is to be found in the tariff provisions for assessing the charges. The bulk of goods shipped, move in car load lots. The weight of a carload is assumed to be at least the capacity of the car. "Ah, ha!" says the American manager. "There we have it. The Chinese figures are padded. If they fill up a car with feathers, they count it as forty tons, when they really are hauling only one ton." Theoretically he is right. But practically there is not much to the point. Nearly half of the tonnage carried is coal. Nearly a third is made up of wheat, rice, and other grains. These commodities are heavy for their bulk. Considerable of the remaining tonnage is taken into the statistics at actual weight. Since charges are assessed according to the capacity of the car instead of actual weight of the load put into it, the shipper puts in all he can. The roof is his limit if he has a closed car. To limit loads in open cars, a loading guage is placed over the lead from the main line, and the load must clear this guage. To prevent overloads of such heavy commodities as coal and ore, frequent weighings are required and in some cases a penalty of triple weights for the excess load is assessed to act as a deterrent.

But in America almost the whole effort is the other way round. American shippers have to be coaxed and threatened and rewarded to fill cars up, rather than penalized for filling them too full. This is because charges are assessed on the actual weight of load in the car. It must not be assumed by this that a shipper can order a carload into it one ton, say, and bill it to destination at the carload rate on one ton. To prevent this, minimum loads are prescribed in the tariffs. But the American business man has always been pressing to have these minima made as low as possible. It makes leading easier, and a low minimum often permits him to ship a small lot of goods at a much lower cost than if he had to pay the less-than-carload rate. Hence he is able to secure many sales which otherwise would be lost to him. The competition between the many railroad lines has made the railroads very weak in resisting the attempts to lower minimum carload weights. In fact, many have voluntarily been put low to further the policy of developing business. Besides, most minima were established a number of years ago, when the typical car had a capacity of only thirty tons. In the meantime, the capacity of cars has been increased to forty, fifty, and even sixty tons. In the meantime also regulation of railroads has become effective, and a minimum cannot be increased without something akin to a lawsuit before from one to a dozen commissions. The result is that very frequently a fifty ton car is moving under a ten ton load. Very recently, as a war measure, because of the shortage of cars, the Food Administration has issued orders raising minimum loads on foodstuffs drastically. Wheat, oats, corn, rye, and barley must be loaded to the capacity of the car. However, the minimum load for rice is only thirty tons, for flour it is only twenty-five tons, for cured meats, cheese and lard, fifteen tons, and for butter and fresh meat twelve tons. The carrying record of the American car for the year 1918 will undoubtedly far exceed anything in its past, but it is a safe wager that even in 1918 it will fail to approach the Chinese record.

Because of rules governing the service, the Chinese car is usually loaded full, while the American car is often less than a quarter full. Because of rules also, the Chinese car is permitted to move quickly from one load to another. In China, the rule has been that twelve hours of daylight were allowed for the loading or the unloading of a wagon. On the Shanghai-Nanking line, this "free time," as it is sometimes called, was restricted to six hours. The further right was reserved, in case unloading had not been commenced within four hours, to shunt the loaded wagon to a godown, unload it with station forces, add these labor costs to the freight charges, and assess storage at five cents a ton per day until the goods were removed. Recently, by order of the Ministry of Communications "free time" for loading or unloading has been fixed uniformly on all Government lines at six hours.

In America, on the other hand, except on a few special classes of equipment, "free time" runs for forty-eight hours succeeding the first 7:00 a.m. after the car is placed at the disposal of the patron for loading or unloading. For example, if a car of wheat be placed on the particular track used by the Blank Company at 8:00 a.m., March 5, to be unloaded by said company, they have until 7:00 a.m., March 8, in which to do the work. If this length of time be taken at both ends of the shipment, that car would be standing still six days in order to handle a consignment that required no more than twenty-four hours for its movement. In addition, Sundays and holidays in America are included as "free time." Although Chinese rules do not sanction any holidays, doubtless practice allows considerable leeway at the period of the Lunar New Year, but in spite of devoted missionary work these many years, commercial China knows little about Sunday. Right here is an advantage of about fifteen per cent enjoyed by the Chinese car.

In addition to the long "free time" allowance, the American car has labored under the further handicap of having the free time period largely disregarded. This could be done with relative impunity, for with a few local exceptions the penalty was only $1.00 per day per car, regardless of capacity. Thus it was frequently cheaper for the consignee to use wagons for storage purposes than to build warehouses. There is an especial temptation to this procedure when the receiver of goods is a middleman who expects to sell the cargo at an early date. By a little delay he may avoid the expense of handling, both off this car and on to another, together with losses from breakage and the like. There is a well authenticated case of an itinerant dealer who shipped a carload of fruit—minimum weight of course—to a city in the Intermountain territory. His car was one of the well-built, felt insulated variety with ice compartments, designed especially for carrying fresh fruit across the continent. After disposing of a part of the load and finding that the city offered a good market during the hot season, he arranged to have smaller shipments arrive by express daily. These he stored pending sale in this refrigerator car. In that manner he prevented the car ever becoming empty. He had ice delivered to this car daily to keep his commodities in good condition. He paid the demurrage charges regularly but he would not release the car until the season was over,—when he sold out and decamped. For forty days at a nominal cost of $1.00 per day he had secured the use of a most efficient cold storage warehouse and the land that made the approaches to it with no further charge for rental. He had the services of watchmen and fire fighting organization which the railroad maintained in addition to the city forces. And when the market was no longer profitable he did not have to linger a single day. He was free to abandon the place with no leases, fixtures, or maintenance to trouble him. Meanwhile, the fruit shippers of California were hounding railway officials, lest their produce perish for lack of transportation to market.

For some time the demurrage penalty in the state of California was $3.00 per day on business wholly within the state and $1.00 per day per car on interstate business. It is a significant co-incidence that three times as many cars proportionately were held beyond "free time" under the $1.00 rate as under the $3.00 rate. The total sum of demurrage paid at the $1.00 rate was much larger in comparison with the number of cars used than under the $3.00 rate. It is on this principle that the Chinese demurrage rates are so effective. The rates vary among the several lines. As a rule, they are based upon the capacity of the car. The rate per day is as low as 15 cents per ton capacity on the Peking-Hankow line and as high as 50 cents per ton capacity on the Peking-Mukden line. Thus, on the

former line, the penalty per day on a forty ton car is $6.00 while on the latter it is $20.00. Contrast this with $1.00 per day in America, on a car the same size or larger. Take into further consideration the cost of labor for handling goods in China as compared with America. Thus, one realizes why it is that in China wagons are "released" promptly, and the advantage they have from this source in the competition for performance honors.

Then, too, there is the effect of a decided difference in car supply. In China cars simply must move fast. In America they may be allowed to move more leisurely. The American car supply has been designed to meet "peak loads." At all the more important points there are many alternative routes open to almost every shipper. If on any day a shipper could not secure from one road as many cars as he thought he wanted, he unhesitatingly routed his business by another line. Besides, large enterprises want to see a supply of cars on hand sufficient for two or three days' needs ahead, so that if deliveries of empty cars on any one or two days should be irregular, there will be no need of reducing the output. The result has been that except on rare occasions, there have been a large number of idle cars,—reserve cars in fact —whose presence goes far to reduce the average amount of work done by all cars. Generally reports of car shortage in America have been highly exaggerated. For as soon as a diminution in the number of reserve cars began to be noticeable, each large shipper in order to protect his interests, as he conceived them—began to order perhaps double the number of cars he required. This was the result of the rule of law which required railroads to distribute cars in time of shortage in proportion to the number demanded in each order. Not content with making his demand from the railroad which usually served him, he repeated them, in part at least, to competing lines. The natural result of course was a great hue and cry for cars beyond all requirements. It is doubtful if a single ton of freight actually perished or was even seriously delayed for the sole reason that there were insufficient cars in America—that is, prior to 1917.

In China, however, there is a car shortage of long standing. It attracts little notice for it is a chronic condition. Shippers must take their turn. And perhaps to some, their turns never come. Why is it that so-called "transportation" companies flourish at almost every large station? The reflections sometimes made upon the integrity of Chinese railway personnel may generally be traced to these circumstances. Scandals affecting even Cabinet Ministers have been possible because of these conditions. A car shortage in China does not mean merely that officers must step lively to place cars where they are needed. It means that shipments must wait, and perhaps not move at all. Last autumn, on one Chinese line, thousands of tons of wheat and rice were piled up at stations protected from rains only by sacks and matting. It could not move, for there were no cars. Under such conditions you may be sure that when a shipper succeeds in getting a car he requires no urging to fill it full and do it quickly.

So far as the Chinese record of car performance represents a car shortage that is real, so far it is a national loss. The railroad loses in revenue. The dealer loses in commodities which spoil while awaiting shipment. The producer loses in the lower prices which the dealer must offer because of the danger from loss. The consumer loses in the reduced supply. Every one loses. But so far as this record springs from the complete use of car space and the efficient use of car time, so far it is a national asset. In some forms of human endeavor "They also serve who only stand and wait." But in the case of cars, the stiller they stand and the longer they wait the less they serve. The rules and practice followed in China have made cars to "fetch and carry" rather than to "stand and wait." The money value of these regulations is no small item. To bring the equipment list of the Chinese Government Railways up to the same relative adequacy as the American supply, would mean at least a doubling of the present aggregate capacity—or an addition of 243,000 tons. This calls for 6,075 cars of an average capacity of forty tons each. Such a car before the war could be delivered in China for about $3,000. So the additional investment required for cars alone would be $18,225,000. At six per cent for interest and four per cent for depreciation, charges for the year from these items would amount to over $1,800,000. Repairs would probably require $100,000 more. Terminal sidings and loops would have to be increased. There would be more empty cars to haul and more weight of car per ton of goods the haul, hence, more locomotives to buy and to repair, more fuel, lubricants, and other supplies consumed. Does any one doubt that, all told, these items would mount to an annual increase in charges of over $2,000,000?

At this moment Chinese railways need more cars. Used as efficiently as the present supply has been, it would not take many to make possible a very gratifying increase in service and in revenues. No one thinks seriously, of course, of doubling the supply very soon. China has avoided and can continue to avoid the conditions which in the United States resulted in a supply of cars that in time of peace was simply wasteful. But right now we should all be glad for those wasteful years. By approximating the Chinese record in car performance, America may now realize upon the vast reserve capacity in her car supply of which hitherto she has been unaware. In her crisis she is doing many unusual things to load her cars and to load her trains to the utmost. The Chinese record indicates how much more can be expected of her railroads ultimately. By this much, it gives confidence to the Allied cause.

The Tsinghua Question

Much anxiety has been expressed lately in American educational circles and among Chinese returned students about the present status of Tsing Hua College, the institution founded and maintained by the Chinese Government for the preparation of Chinese students to whom the Government grants scholarships in America. The accusations brought against Dr. Tsur Ye-tsung, once Dean and, since 1913, President of the College, have resulted in his resignation, and the entire Peking community is not only convinced that an injustice was done Dr. Tsur, but also that his removal was suggested to those who accused him by a political clique with ulterior motives which it is not diplomatic to define. Apart from the character of these motives, any attempt to involve the administration of Tsing Hua College in Chinese petty politics must rob the institution of much of its prestige and usefulness, and must therefore be resented by all Americans and Chinese students returned from America who are either directly or indirectly interested in education in this country.

In 1908 the United States Government announced to China its intention to reduce the Boxer Indemnity claim from $24,440,728 to $13,655,472. The Chinese Government then undertook to use the annual remittances to educate Chinese students in America, and later announced its intention of establishing a preparatory school at Tsing Hua to train the successful candidates for scholarships in America. It was understood that a member of the Legation staff should have a voice in the direction of the institution. The agreements entered into were not precisely hard and fast in a legal sense, but were binding upon China in a moral sense.

Recently, when the United States Government, together with the Governments of the Allied Powers, agreed to the suspension of Boxer Indemnity payments for a period of five years the Ministry of Foreign Affairs gave a clear understanding that China would continue to send students to America and to maintain Tsing Hua College on the same financial basis that has prevailed heretofore.

In the maintenance of Tsing Hua College, in its freedom from political meddling and the arbitrary reduction of its subsidies, Americans have an intense interest and a sound moral right to demonstrate that interest. The removal of President Tsur, the Waichiaopu's control of expenditures in minute detail and the recent attempt to appoint to the Presidency a man who is not an American returned student show a new tendency towards a kind of control of Tsing Hua which every one is convinced is opposed not only to the interests of the College but also to American influence and interests in China. The checking of this tendency must primarily be left in the hands of our diplomatic representatives in China, but it is the business of every American organization in China to see that all Americans clearly understand the situation and that they are prepared to support our diplomatic representatives by concerted action or propaganda when called upon. A similar duty devolves upon the Chinese returned students and their various organizations.—*Peking American News Bulletin.*

Editorial Comment

THE FAR EASTERN REVIEW

ENGINEERING FINANCE COMMERCE

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The New Departure in Banditry

For a good many years China has been a very comfortable field for the adventurer. It has been possible for lone and unguarded travelers to go wandering off into the interior, thousands of miles from railways, and to return telling of all manner of strange sights, peoples, and customs without having a single thrilling escape to narrate. One has had to strain the imagination to give an account of a long journey into the interior the color which every eager auditor insisted upon. Just the other day a railway train running through the populous provinces of Honan and Kiangsu, between Kaifengfu and Hsuchowfu, was held up by bandits and a number of passengers, including Europeans and Japanese, were robbed while quite a few Chinese were wounded. That is how things have changed.

The last two or three months have brought forth the richest crop of offenses against the persons of foreigners resident in China that has been recorded for many years. First of all came the firing upon foreign steamers, both merchant and war vessels, on the Yangtze, which resulted in the death of several Europeans. Then came the kidnaping of Engineers Kyle and Purcell in Honan by a large party of bold rovers who carried them into the mountains together with a number of Chinese whom they were holding, and demanded a ransom of arms, ammunition, and appointments in the Chinese army.

An Anglican missionary was recently murdered by pirates in Fukien.

Two ladies, Mrs. Dixon and Mrs. Catherine, missionaries in the interior, were taken by bandits on the Shantung-Kiangsu border and held for a ransom. A determined Chinese magistrate effected their release by hounding the village elders of the district.

An agent of the British-American Tobacco Company in Shantung, a Mr. Love, was also taken by bandits of a less vigilant order, from whom he escaped in a few days.

A missionary, a lady, was recently murdered in western Shensi.

The adventures of Kyle and Purcell of the Siems, Carey Railway and Canal Company, have been of a particularly spectacular character and need no coloring in the telling. Neither Sicily nor the Balkans could have produced anything better. With a party of Chinese engineers and a following of cooks, servants, cartmen, and soldiers from both Peking and the local garrisons, Kyle and Purcell were surrounded and seized in the village of Chang Pa Chuang, near Wuyanghsien, in the district of Yencheng, Honan province, March 4, and after those of the soldiers who did not escape in the panic had been overpowered, the foreigners were carried off into the mountains; since then Chief Engineer Kyle has been hustled from valley to valley and peak to peak under his bandit guard, who were exceedingly busy eluding the soldiery sent out from many district garrisons to rescue the foreigners. In a skirmish between soldiers, which took place March 25, Purcell, with a good-natured bandit and a Chinese engineer named Wu, evaded the main party and escaped to the garrison town of Yehsien, subsequently being escorted from city to city as far as the railway. Chief Engineer Kyle was held by the bandits and as they threatened to kill him if any attempt was made to rescue him by force, and were forcing to lead their life, which was by no means an easy or a sanitary one and must have been a severe strain upon a man who is over sixty years of age, his friends were greatly worried about his position.

This trick of taking foreigners and holding them for ransom is an innovation in China and a very unwelcome one. The person of the foreigner, thanks to an official system which makes every government officer, no matter how small, responsible for the crimes committed in his district to those above him in an ascending scale that reaches to Peking, and thanks to Peking's solicitude for the safety and comfort of foreigners, has heretofore been almost sacred in the interior, and until recently it was possible for an unarmed foreigner to travel quietly through bandit-ridden country, carrying whatever wealth he liked, passing armed bands on the roads and rivers, hobnobbing with the enemies of the state if he felt so inclined, without having to give any thought to his safety. These days are evidently passing, and their passing is pretty good evidence also that the sense of responsibility which has held China together for all these centuries, more than any other force, is also passing.

This is a bad sign, and eager as every one is to see China achieve a workable democracy, the loss of a sense of responsibility and the loss of respect for authority, have to be traced to the introduction of "liberal" institutions. This word "liberal" in Chinese is an expression which the Chinese translator who has not yet learned to choose his words insists upon translating "as you please," or "on your own," and as this is also the interpretation which the official classes in China put upon the expression by example, it is small wonder that the common people have come to interpret the new liberty which they are told is theirs as license, and the liberal institutions which the reformers are preaching, as "on-your-own" institutions. Under the old régime the people got plenty of repression and very little service in return for their taxes. Now they get neither, but find themselves paying for the privilege of watching their betters play politics and support their political aspirations with bandit armies. If the big men can arm coolies and march them up and down the landscape in the campaign for jobs with perfect impunity, it is naturally suggested that the little men can also arm coolies and march them up and down the landscape in a campaign for whatever is worth taking. The big men appear to be responsible to no one. They have adapted

themselves to these glorious new "on-your-own" institutions. So since the big ones have broken the chain of responsibilities, that once reached from Peking into the most remote ravines of the western mountains and the last waterhole of the northern deserts, the little ones can do no more than follow suit. This explains the new departure in banditry.

Old Ships for New Steel

It has taken a good many months of bartering and diplomatic persuasion to secure an amount of shipping from Japan for the service of the Allies on the Atlantic equivalent to Great Britain's monthly losses of steamers last year; but the exchange of American steel for Japanese ships is now definitely arranged and some of the ships which are to carry men, provisions, and munitions from America to Europe are already on their way, others are building, and still others are to be built with the American steel involved in the exchange contract.

It has been impressed upon every people under the sun that an Allied victory depends in a great measure upon the Allies' ability to keep sea communications open. This the Japanese Government undoubtedly appreciates, and there is every reason to believe that the Government has been more than willing to contribute as much as possible. It is estimated that the present arrangement, by which the Government pays the difference between the Allies' charter rate and the present prevailing rate of tonnage will cost the Japanese treasury about eighteen million yen. But shippers have not been so willing to make sacrifices. The war has not been brought home to Japan with quite the same force as it has to the peoples who live by bread tickets and scan the casualty lists for the names of their friends and kin, so the Japanese business man is still a business man, and the Oriental shipowner is still the Oriental barterer, delighting in the prolongation of a deal and arguing out each little detail with a finesse, and at the same time a relish, which are both foreign to the Occidental. This probably has had much to do with the time that has been wasted in coming to an understanding.

When Viscount Ishii was in America Japan's plea for an allowance of steel for shipbuilding purposes was presented; but America had a big program of shipbuilding on her own account ahead of her and many other urgent needs for steel, so the Washington officials were hard-headed and insisted upon having ships in return for steel, if any steel was to cross the Pacific. The details of the subsequent bargaining are not interesting. According to the final arrangement 514,000 tons of Japanese shipping are to be placed at the disposal of the Allies and America. Of this total 234,000 tons have still to be constructed in the Japanese yards. The Japanese Government has chartered from its own shipowners 150,000 tons at prevailing rates, which will be turned over to the Allies at once at the inter-Allied charter rates. Between May and December the shipowners will deliver, under charter to the United States Shipping Board, 130,000 tons of shipping, in exchange for which one ton of steel will be released for one ton of shipping. The shipowners further agree to build and deliver, in 1919, 234,000 tons of shipping for which steel will be released in the ratio of one ton of steel to two tons of shipping. The charterers are responsible for the armament of the vessels, while the Japanese firms agree to supply officers and crews. According to the Japan *Advertiser* of April 17, the following are the vessels which are to be placed at the disposal of America in the immediate future:

N. Y. K.: Tottori Maru, 9,960 tons; Ceylon Maru, 6,440 tons; Kichirin Maru, 5,500 tons; Tosa Maru, 7,600 tons; Penang Maru, 8,200 tons; Jinsen Maru, 5,500 tons; Rangoon Maru, 8,000 tons; and two others.

O. S. K.: Indo Maru, 7,900 tons; Java Maru, 7,900 tons; Malay Maru, 7,900 tons.

T. K. K.: Seiyo Maru, 10,300 tons; Persia Maru, 4,750 tons.

Mitsui Bussan: Komakata Maru, 4,320 tons; Otaru No. 2, 4,000 tons.

Tatsuma: Ataka Maru, 5,800 tons.

Katsuda: Ide Maru, 6,600 tons.

Uchida: Aikoku Maru, 4,720 tons.

Department of Communications: Rashu Maru, 6,100 tons.

Kishimoto: Shinsei Maru, 6,800 tons; Mewo Maru, 4,000 tons.

Since the conclusion of the deal one very demonstrative fly has been discovered in the ointment. If the war were not so serious it would be rather amusing. Four of the steamers which were to have been turned over to the American Shipping Board were condemned as useless hardware by the four skippers who command them, and who may therefore be credited with a knowledge of them, when they were called upon to steam away to the Atlantic. The officers refused to go. According to these officers the vessels offered were all old boats, and the four which they were to take were particularly unfit. They were anywhere from 10 to 37 years old, said the commanders. They could not possibly outrun a submarine and if a gun were fired from the deck of any one of them, the shock would sink the ship. The canny shippers were also taking into account the fact that the boats were heavily insured and that it would pay the owners to sink them. For these various reasons extensive publicity has been given to the decrepit character of boats offered, and the N. Y. K. in the face of comment has decided to make some substitutions. Here again the Oriental zest for putting through a good deal seems to have got the better of a few shipowners' devotion to the Allied cause.

The Perplexing Chinese

The business of explaining the Chinese is one that is invariably attempted by every one who visits China for however long or short a period, and it has been undertaken by a great many who have never visited China at all. This would imply that the Chinese need a good deal of explaining and the implication is just. The man who decides after long residence in China that the Chinese are precisely like the other peoples of the earth has simply been salted by the great sea and, having come to think and act as a Chinese, assumes that the race and nation from which he sprang think and act as the Chinese do. It takes an astute outsider, with a knack of keen observation to point out the differences between the Chinese and other peoples and such observations are really valuable. They are of real benefit to the business man, the missionary, and the diplomat in the Orient in their dealings with a race which has developed through three or four thousand years a singularly independent code of morals and prejudices. The latest contributor of really astute comment upon the Chinese character is Mr. Tokutomi, editor of the daily newspaper *Kokumin*, who was recently in Peking and who has now returned to Japan to express his views upon China in the columns of his paper.

Mr. Tokutomi speaks of one marked peculiarity of the Chinese mind as the "duality of the Chinese." A happier and more scientific description might be found, but in his comments the writer makes the meaning of the expression, as he uses it, clear enough and the foreign resident in China will hail his conclusions as exceedingly just and truthful.

"The duality of the Chinese," says Mr. Tokutomi, "has become a sort of national characteristic by practice of centuries. The Chinese draw a distinct line of demarcation between precept and practice, which they consider as far apart as the poles. And therefore the Chinese pay no attention whatever to an act of their compatriots that runs counter to their precepts. Other peoples fret and worry to make their practice conform to their ideals." He further declares that the Chinese can be absolved from hypocricy, because a hypocrite must needs be conscious of his "duality"; that is, his actions must deliberately and consciously

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

International C. O. D. System.—Arrangements for conveying parcels and packages cash on delivery have been concluded by the Japan-China Through Traffic Conference, in session in Yokohama. A protocol providing this has been printed and signed, thus closing the 1918 conference.

Through this agreement, a merchant in Tokyo or any other large city in Japan may deliver a parcel to a railway station, with instructions to deliver it to a customer in one of five Chinese cities—Peking, Tientsin, Shanghai, Shanhaikwan, or Hankow.

The railway will pay the import duty charged at the Chinese frontier, will add it to the bill, and in Peking, say, will send word to the consignee that his package is awaiting him at the railway station. By calling at the railway parcel office, and paying the sum, the receiver can obtain his package, closing the transaction. Chinese exporters also may send packages C.O.D. to customers in the chief cities of Japan.

Since packages weighing up to 66 pounds are included in this arrangement, it is expected to do much to stimulate trade between the two countries.

Japanese Railway Profits.—The net profit of the Imperial Japanese Railways for the past fiscal year is estimated at Yen 35,870,000 against Yen 20,450,000 as estimated in the Budget for the same year. The total receipts are Yen 211,150,000.

Manchurian Railway Reform.—General Horvath has notified all the heads of the Railway Department and its agents along the line that the American instructors will now begin to introduce reforms on the railway according to the original arrangement and that, therefore, they are to give them every assistance in carrying out their work.

S. M. R. Loan.—In the money market it is expected that the South Manchuria Railway Company will soon float a new loan of Yen 10,000,000.

Tokyo Subway Planned.—Underground and overhead railways for Tokyo have been on the tapis for years, and until the first sod is turned or the first iron stanchion erected it will be wise not to reckon optimistically on any speedy relief of present street-traffic conditions. Still it is a fact that the prefectural government has sent in to the Imperial Government railways a formal application for permission to begin work on an underground line from Shinagawa to Asakusa, a distance of about seven miles. An optimistic reporter states that it is hoped to begin work towards the end of this month. Three years is the period put for the completion of the work. Such a line would be a boon to Tokyo, but it must not be forgotten that in a few years it will be possible to travel on the Government railways across the city. The linking up of Tokyo Station with Uyeno will go a long way to relieve traffic, but the completion of the Government line would not render less necessary an additional system that will relieve the surface cars of their present enormous traffic—which greatly increases with each passing year. Therefore, although we are not over-optimistic, having before heard of the projected railway scheme, it is some satisfaction to know that this time the prefectural government, and not merely private individuals, are interested in the underground railway.

Chinese Railway Collision.—At about 8 p.m., April 2, at a place named Pemashan (White Horse Hill) just south of Tsinan, two freight trains on the Tientsin-Pukow Railway collided, and the impact resulted in the destruction of one engine and five freight cars, the total loss (? including goods), being estimated at about $1,500,000. Ten persons were killed, all of whom were employees of transport companies convoying the cargoes during transit. The express train from Tientsin to Pukow was delayed at Tsinan for fourteen hours owing to the line being blocked.

Railway for Mongolia.—It is reported that negotiations are on foot for a loan for the extension of the new Supingkai-Chengchiatun Railway from Chengchiatun, Manchuria, to Kailu, in Eastern Mongolia.

The Supingkai-Chengchiatun line, which was constructed by means of a loan from the Yokohama Specie Bank, is now considered as completed, construction trains carrying passenger cars are running on a regular published schedule between Supingkai and Chengchiatun, though over a wooden bridge across the Liao which will be changed to steel before the road is considered officially finished. The proposed extension into Eastern Mongolia is 130 miles in length, and it is said that 1,500,000 yen (roughly, $750,000 U. S.) will build it. According to the agreement under which the Supingkai-Chengchiatun Railway was built, the Yokohama Specie Bank must be given first chance to advance any funds needed for extension of line. The new loan will probably be 2,000,000 yen ($1,000,000).

The extension of this railway into Eastern Mongolia was contemplated from the first, as Japan is anxious to get into railway communication with that comparatively undeveloped country. The charter of the Oriental Development Co. has recently been amended in order to make it freer to advance money for industrial developments in Eastern Mongolia as well as in Manchuria.

Japanese Elevated.—The newly constructed line between Yokohama station and Sakuragicho station was opened to traffic April 1, facilitating the electric train service to Tokyo.

With the completion of the new elevated section the two express trains operated each morning and afternoon between Tokyo and Yokohama will be taken off, additional trains will be run in, the intervals between trains being from fifteen to twelve minutes.

The express train did not stop at Tsurumi, Kawasaki, Kamata, and Hamamatsu stations, but under the new regulations all Tokyo-Yokohama electric trains will stop at all stations. The new trains leave Sakuragicho at the following time: morning, 6.56, 7.01, 7.25, 7.38, 7.55, 8.23; afternoon, 4.26, 4.33, 4.56, 5.03, 5.28.

Shanghai Tramways.—The following is the traffic return of the Shanghai Tramways (Foreign Settlement) for the month of March, 1918, and for three months ended March 31, 1918, with figures for the corresponding periods last year:

	March, 1918.	March, 1917.
Gross Receipts ...	$136,701.22	$130,277.86
Loss by currency depreciation ...	30,914.09	29.833.37
Effective Receipts	$105,787.13	$100,444.49
Percentage of loss by currency depreciation... ...	23.95	24.28
Car Miles run ...	335,448	339,741
Passengers carried	6,210,609	5,893,199
	3 Months ended March 31, 1918.	3 Months ended March 31, 1917.
Gross Receipts ...	$400,440.02	$387,157.75
Loss by currency depreciation ...	86,489.75	87,270.86
Effective Receipts	$313,950.27	$299,886.89
Percentage of loss by currency depreciation... ...	22.88	23.88
Car Miles run ...	975.355	975.975
Passengers carried	18,118,624	17.383,857

SHIPPING

Hongkong Takes Dutch Ships.—The Hongkong Government at the end of March took over five Dutch steamers, aggregating 28,151 tons.

Japanese Charter Rates.—The surprisingly high charterage of boats for the American service of Y.41, asked as a result of the recent shortage of the space on that service, has been raised. Now Y.45 is the rate quoted by the Nippon Yusen Kaisha, the Tokyo Kaiun Kaisha, and the Taiyo Kaiun Kaisha for the following three boats newly built by the Nippon Kisen Kaisha of Kobe and which will be offered to America in exchange for steel:

Hashun Maru, 3,100 gross tons, for service between Hokkaido and Yokohama, Y.41, charterer the Tokyo Kaiun; new boat of Nippon K. K. 6,800 gross tons, single service, delivery July and August, charterer the N.Y.K.; new boat of Nippon K.K. 2,000 gross tons, single service, delivery August and September, Y.45, charterer the Taiyo Kaiun.

Chinese Cruiser in Vladivostok.—The Chinese Cruiser Haiyung joined the British, American, and Japanese war vessels in Vladivostok, April 17.

Dutch Ships in Manila.—Within a few hours after the receipt by local authorities of a radio containing instructions to take over in the name of the United States government all Dutch boats within Philippine jurisdiction,

THE FAR EASTERN REVIEW

COMMERCE :-: ENGINEERING :-: FINANCE

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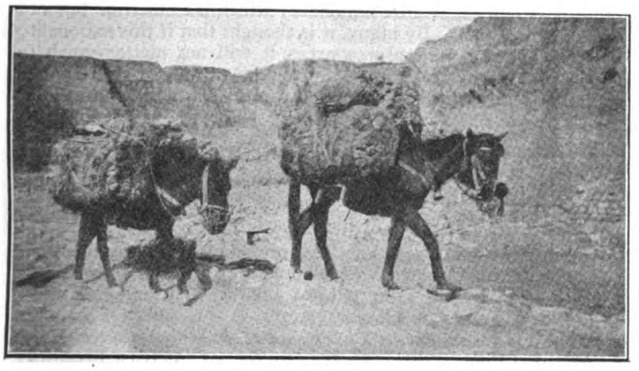
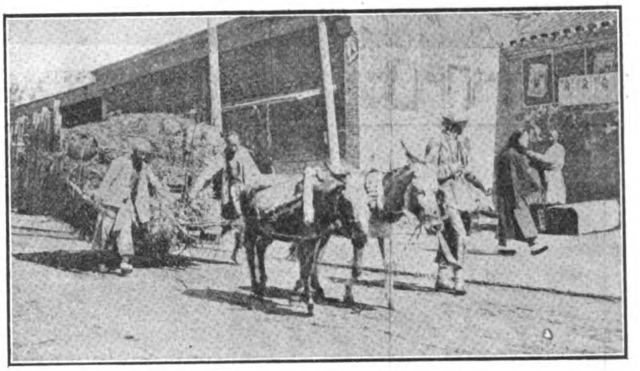




PRIMITIVE MEANS OF TRANSPORTING FARM PRODUCE. PACK MULES AND DONKEY-DRAWN WHEELBARROW

The Partnership Between Railways and Agriculture in China

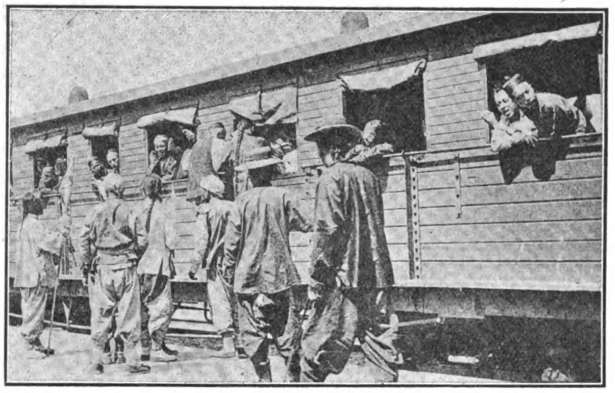
Why and How Government Railways Should Further Agricultural Development

The farms of China contribute the most valuable traffic in goods carried by the Chinese railways. The revenue from this traffic does not fall far short of that from all other sources combined. Taking the figures for 1915 as a basis, $32,473,000 were earned by the Chinese Government railways from carrying goods. Of this, $1,567,000 was in reality only a "paper figure" being assessed upon goods carried for the railways themselves. The remainder represents the actual commercial business. Out of this remainder,—$30,906,000—agricultural products made up $11,820,000, and animal products, which may be considered along with them, amounted to $1,800,000, which was 44 per cent of the total commercial business.

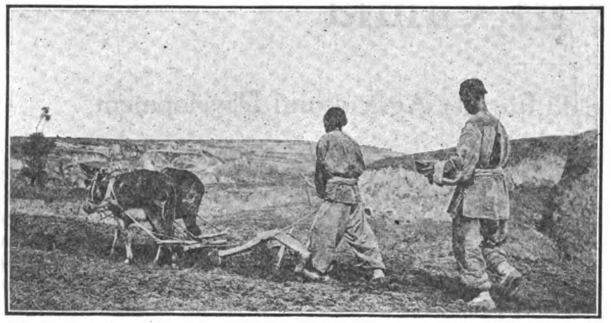
It is quite the fashion to urge branch lines to mining districts. And this is altogether proper. China needs development of her mineral resources. (And in a mining district, given a certain amount of standard machinery in place, the volume of traffic which will be derived can be predicted with substantial accuracy. Once the line is built and the machinery is in operation, the results are immediate.) But the present conditions seem to indicate that a similar amount of energy and ability applied to the development of traffic in agricultural products would bear very similar returns. This additional traffic, if composed of agricultural products, would be doubly profitable for it would not require additional investment of large amounts in branch lines and it would yield greater returns per unit carried. For, in 1915, although agricultural and animal products yielded $13,620,000 in revenue compared with $9,097,000 from mineral products, the railroads were compelled to haul 910,000,000 ton kilometers of minerals as against only 723,000,000 ton kilometers of agricultural and animal products. The haul on these higher class commodities averages nearly double that on coal, which is another factor making for profit. Of course there is a regularity in the flow of mineral traffic which renders it desirable, but very probably if the traffic were developed wisely and storage facilities provided properly, a similar regularity could be obtained in the movement of products from the farm. Certainly, there is as great a tendency for coal movements to pile up in the wintertime, as there is for farm products to move just after harvest.

Besides, it is very likely that mineral development will be very slow for the next half decade at least, and who knows how much longer? In Europe the accumulations of a century have been swept away in a few years of war, and the future is mortgaged beyond the ken of man to see the day of redemption. America proposes to put into the war each year double her usual annual production. Her own internal development meanwhile is standing still. Her railway system alone will require billions, so it is estimated. Tremendous hydroelectric projects are required to provide against her decreasing output of fuel oil. These were about ready to be launched when she entered the war. Irrigation and other reclamation plans will require huge sums. Electric traction, rural highways, municipal improvements, shipbuilding, and scores upon scores of more private projects are pausing

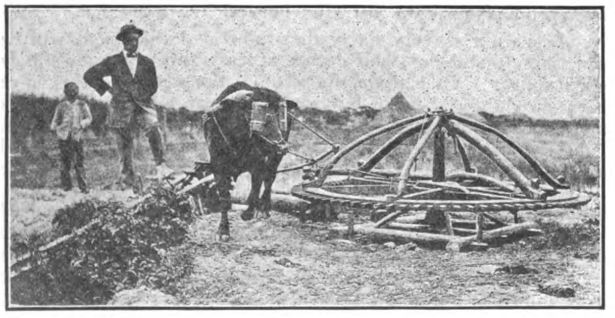
THE GREAT BEAN TRADE OF MANCHURIA IS WHOLLY DEPENDENT UPON THE RAILWAYS



THE NORTHERN RUSTIC PATRONIZES THE RAILWAYS, TRAVELING THIRD CLASS



PLOWING AND SOWING AS THEY DID IN CONFUCIUS' TIME



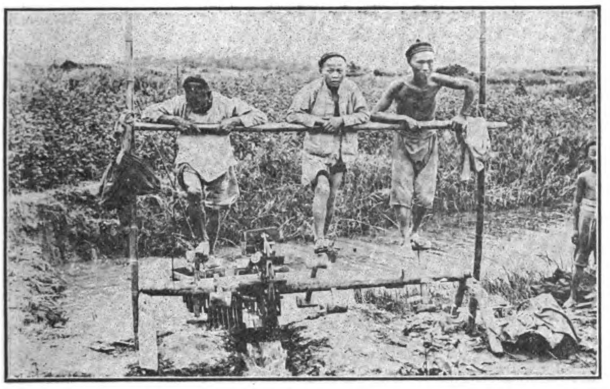
THE IRRIGATION WHEEL

merely long enough "to make the world safe for democracy." That accomplished, they will be in the market clamoring for their portion of investment funds. Americans first of all want to make America a pleasant place in which to live. In addition, experience proves that such investments pay. They are safe. They are governed by laws which are understood, whose enforcement can be depended upon, and whose interpretation is intrusted to courts which deal *out* justice rather than *in* it. There are no "commissions" to be paid to government officials. Business is transacted according to precedents which are familiar, and labor, although it may be independent and unruly at times, is efficient, intelligent, and for the most part honest. Not all of these things can be said for investments in China. Add the handicap of language, a currency system which is no system at all, and the frequent danger from bandits and revolutionaries, and it will be strange if the American investor can be interested very heavily in Chinese investments after the war. The only other possibility is from a nationality which is numerous but not welcome in China. By many, it is thought that if this nationality develops China's mineral resources, it will not matter much to China whether her railroads are profitable or not. Some Chinese capital is being joined with foreign capital for mining purposes, but there are very few purely Chinese enterprises. Mining is a large scale industry. Its capital requirements are too large for an individual investor to meet. Yet the corporation as a form of business organization has rarely been successful in China. The reasons for this need not be named, but they are nearly as potent to-day as at any time in the past.

It is practically certain, therefore, that railway traffic cannot look toward mineral development for any considerable augmentation. It is admitted, of course, that mineral traffic would to-day be considerably larger if the railways had the equipment with which to haul it. But with that exception the farms of China remain as the source of increased railway earnings upon which most dependence can be placed.

In order to realize the possibilities in this source of traffic there will have to be a change in the point of view of those responsible for railway policy. In China the attitude of the railway official appears to be that his function is principally to produce a transportation service to meet the demands for it. But ambitious manufacturing concerns have found it profitable not only to produce an article or a service but also to create an increasing demand for their product. This has created within the past generation an entirely new profession,—the profession of salesmanship. This phase of railway activity is apparently ignored in the organization of the Chinese railways, as well as in those of some other countries. A few years ago the makers of a certain popular-priced motor car professed to be unable to build the cars as fast as the public wanted to buy them. Accordingly, they changed the title of their agents from "salesman" to "distributor." The Chinese railway organization provides distributors but not salemen. This may be proper enough if the demand throughout all seasons of the year is beyond the capacity of the railroad to satisfy. But it is significant that these motor representatives did not change their methods after their title was changed from "salesman" to "distributor." They continued to hunt up prospects, give rides to the possessors of likely bank accounts, furnish draymen, merchants, and professional men with estimates giving annual costs of doing their work with motors as compared with horses. And the employing company continued to give prizes monthly to the individual who "distributed" the most cars. With such a market worked up, it was not difficult to interest financiers in providing the funds with which to create a plan sufficient to supply the demand. That is the attitude which should be expected from the railroads of China. It will always be possible to devise means of financing purchases of additional equipment, if sufficient additional earnings from it are in sight.

The methods by which the tonnage of agricultural products carried by railways may be increased are various, but they may be grouped first under two heads,—(1) diversion to railways of present tonnage carried by waterways, and other routes of transportation, and (2) the creation of transportation tonnage which at present is nonexistent. The former involves salesmanship in bringing to the notice of shippers the regularity, the safety,



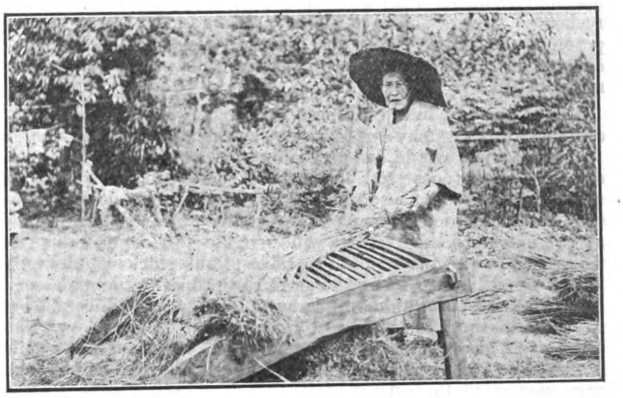
AN IRRIGATION TREAD MILL. BRAWN IS CHEAPER THAN EITHER BRAINS OR MACHINERY

EVERY FARMER HIS OWN MILLER

the expedition of the railway service, and a constant watch upon operation to insure that the promises made in this respect are kept. It also involves a very painstaking study of rates, a judicious discrimination, perhaps, in order that no business is lost because the railroad is underbid at a price which would still leave a profit. This will involve, in many cases, a departure from the strict distance basis upon which the Chinese system of rates is grounded principally. No doubt there will arise many who will protest against what they will call the injustice of the discrimination against some communities in favor of others. The subject is too large for discussion here, but decision upon it will rest upon the answer to this question—Which is of greatest importance?—abstract justice or an increase in the well being of the community as a whole? For many years there will be little competition between communities as such and any difference in rate levels will have no competitive effect. When development brings the rivalry which has been so conspicuous a feature of railway disputes in Western countries, then safeguards may be introduced in China as they have been introduced elsewhere.

The creation of *additional* transportation tonnage is more important to the community, and perhaps also to the railways, than successful competition for *existing* tonnage. It calls for technical ability of a high order and a definite policy. It explains the phenomenal growth of railways in Canada and in the United States. Many of the methods which have proved successful there may be applied, with such modifications as are necessary, to conditions in China. These methods may be grouped under four heads—(1) adaptation of special kinds of equipment to the needs of products which now are marketed only in small quantities due to losses in transportation; (2) improvement in marketing arrangements to reduce losses, reduce distribution expense, and extend the area of consumption; (3) encouragement of specialization in production of particular commodities in regions peculiarly favorable; and (4) increase of output.

Increase of output has many phases. It depends primarily upon man power, available area, soil fertility, and the skill with which the man power is applied to the area and the soil fertility available. When one sees the one-wheel barrow used as the only wagon, because cultivation has crowded the highway down to a mere footpath: when one sees ponds and ditches yielding a crop, and mountain sides terraced to bear a harvest; when one sees how the filth of the cities and the excrement of a passing animal are all jealously conserved and carried back to the soil; when one sees the silt of rivers laboriously dug up and spread upon the fields, it would seem perhaps, that all had been done which skill and labor can do to produce a maximum supply of food for China. Possibly such is the case. Yet in every other line of human endeavor, among rigorous peoples, whenever the utmost limit had been reached supposedly, some new method has proved that only a beginning had been made. The human mind has admitted obstacles, failures even, but never limits. The idea that the Chinese farmer has reached the *ne plus ultra* of agricultural knowledge is as absurd as it is dangerous. No revolutionary methods are likely to offer much hope. But without doubt a



THE CHINESE THRESHER. BEATING OUT MILLET

multitude of small opportunities exist in which, by the application of skill and intelligence, improvement can be made.

In America the rising cost of living has directed attention to the phenomenal growth of cities. In 1880, the United States census showed the existence of two persons on the farms to feed every mouth in the cities. Thirty years later there were no more than one. An effort is being made there in the hope that not only can this city-ward tide be stemmed, but that an actual backflow from the tenement to the land can be produced. In China nothing like this may be expected. The Chinese are essentially an agricultural people. Out of the whole population of 300,000,000 there are only a half dozen cities with a half million or more. There is no dearth of man power on the farms. Yet there is man-less land as well as land-less men in China. To get them together will require a program very similar to that so successfully used by the Canadian Pacific and other lines similarly situated. In Manchuria and in the territory north of the Great Wall toward Mongolia the population is comparatively sparse. There is a coolie movement each spring from the south into Manchuria and in the fall from Manchuria homeward. This movement brings in some revenue, perhaps half a million dollars, but it is carried at such low rates that there is little profit from it. This "bird of passage" movement, if converted into permanent settlement, would create a demand for goods traffic which would be far more valuable. It is urged that Chinese do not lend themselves to colonist schemes because they do not like to leave their old homes. The teachings of Confucius as interpreted by Mencius require a son never to go more than a day's journey from his parents during their lifetime. But the Straits Settlements, Hawaii, and California, contain abundant proof that wherever the Chinese can find an environment to which he can adapt himself the tenets of Confucianism do not stand in the way of an easier mode of life. In Canada and the western part of the United States, an area

Holstein among dairy breeds. It is fairly apparent that foreign cattle are resistant to Chinese conditions only slightly less than native cattle. However, the cost of foreign stock is so great that it is impracticable to import many female animals. Some crosses between imported males and Mongolian cows have produced calves of considerable promise. A small orchard has also been set out within the past two or three years with a view toward introducing improved fruits. The first results are what might be expected; namely, that a host of insect pests have destroyed a great deal. But sprays and germicides have conquered such enemies in other lands, and there is no reason to doubt that skill and perseverance can do as much in China if given the opportunity and time.

Missionaries have been doing something along this line. Their work in acclimating fruits at Chefoo is well known. Something of the same sort has been accomplished at Changlihsien. At Wofussu a beginning has been made under the auspices of the Y. M. C. A. There is a trained agriculturist at Nanhsuchow mission. The Tungchow dairy is well known in North China. Undoubtedly there are a great many more instances of the kind. At the University of Nanking announcement has been made of a course in silk culture. Students from all sections of silk producing provinces are invited to attend the course, bringing with them eggs from home. These will be attended by the student and developed in the manner followed in the student's home surroundings. It is expected that by trying the more successful methods upon other eggs from the less successful regions, improved methods can be discovered, and China helped to regain her position in the silk markets of the world.

All of this is good. But it does not go far enough. Missionaries and schools are comparatively few. The Government is too much occupied in a struggle for existence to extend experiment stations much in the near future. About the only enterprise which is in a position to profit directly from an increase in well-being among the rural population is the railway system.

The most conspicuous examples of railways which have attempted to carry scientific knowledge to the farmers in the territory which they serve, are the Atlantic Coast Line and the Southern Railway, both serving the cotton growing southeastern states of America. This part of the Union was particularly backward agriculturally for several reasons, among which were a large negro population, poverty which succeeded the Civil War, decreasing fertility due to constant cotton cropping, but most important of all, perhaps, dependence upon a single staple. If the one crop failed or the price was low, the farmer was so crippled financially that he was plunged into debt at so high a rate of interest that he was in virtual slavery the rest of his life. For this reason these railways inaugurated a campaign for *general* farming. This campaign consisted in demonstration trains containing exhibits of improved grains, grasses, vegetables, and other products, designs for buildings, models of dairies, charts comparing results under the old methods with results under the improved methods, and pens of actual animals of the best thoroughbred types. These trains were accompanied by lecturers who explained what was shown, the methods used, and the ends attempted. Fairs were made a part of the propaganda, and contests were arranged with prizes for the best hog, the best ear of corn, the biggest yield of potatoes, the most profitable acre of vegetables and similar desirable objectives. These methods aroused considerable interest, but for a number of years they seemed to make little headway in improving the lot of the southern farmer. In spite of the generally high average of schooling and the reputation of the American for intelligence, the American farmer is essentially a conservative when it comes to methods to be used in the business in which he and his fathers for generations have lived. Like the Chinese farmer, he has lived very close to the margin of existence according to the standards of his community. He has so little and that little is so precious to him, that he is loth to risk any of it in doubtful experiments. He was interested in a seven hundredweight hog and a ton steer just as he was interested in the elephant at the circus. But he had no more idea of raising such hogs and such steers than he had of raising elephants. From the lectures and the exhibits on the demonstration train he might be ever so convinced that by a certain course of feeding and breeding he himself could produce a seven hundred-weight hog. But his prime concern was not what a man could do for a hog but what a hog could do for a man. And of that the lecturer in a demonstration train was rarely in a position to prove convincingly. He generally had to admit that these monstrous animals had required a course of stuffing with high-priced feeds and personal attention that left no profit unless the animal were sold at a price for show or for stock purposes which was very much in advance of what the farmer very well knew was the value for meat. "White shirt" and "book" farmers often had produced superior animals, but the business success of such "dude" farmers was generally a joke in the neighborhood. Yet these railroads persevered and to-day, when a crisis has arisen, these southern states are able not only to keep up the production of cotton but to feed themselves almost unaided, and thus allow the surplus of the North and of the West to go over the seas and sustain the peoples who are at the forefront of the fight to preserve civilization.

However, it has always seemed to the writer that quicker results would have been obtained if these railways had also gone into business of actual farming at various points, under the same conditions as those under which their patrons farmed, and, by applying the methods which they were trying to introduce, had demonstrated in cash results the superiority of these methods. Excursions to these demonstration farms in a very few years would have so spread the news as to have made them a veritable Mecca for a host of believers. The system of accounts by which some of the proof would have been educed, in itself would have been a valuable part of the educational program.

One of the Chinese Government lines, it is said, is preparing cases to be installed in all its more important stations in which to display the products of the surrounding country. This is a valuable beginning. It is said also that this line is considering the establishment of agricultural fairs and the fitting out of a demonstration train upon the same principles as those governing the American lines which have been mentioned. But the demonstration farm should be a part of the program. The demonstration train should be a messenger of results rather than a reciter of things hoped for but not seen. By all means have the demonstration train. Do not delay it. For, while the farm is being prepared for its mission, the public mind can be prepared to receive its ministry.

It is a matter of history that many years ago in the state of Nebraska, farmers burned a large part of their corn crop for fuel. With the improvement and the extension of transportation facilities it was found, of course, that the corn, which formerly had been burned, could be marketed for a sum which would buy sufficient coal and leave a comfortable margin besides. China can point to similar examples. Bean oil has served to light the farmer's hovel, but wherever the railway has come the proceeds from the sale of the beans will buy a great deal more light in the form of coal oil and leave a margin to be applied to a better standard of living. In this operation, the railroad gets the haul of the beans out, of the kerosene in, and perhaps a short trip by the farmer out of his profits in the transaction.

Something was said above concerning the improvement of dairy cows. But why improve dairy cows when Chinese do not drink milk nor eat butter? Well, that is hardly a fair question. Some Chinese do drink milk and eat butter, and more would do so if prices were not so exorbitant. Foreigners both in and out of China use these commodities and are willing to pay for them. The prosperity of Denmark is said to have had its source in the rise of dairying in that country. It surely did not get rich by eating its own butter. Who knows but that in time China could compete with Denmark for her foreign market in dairy products? But right now China imports over a half million taels of butter, while imports of cheese, condensed milk, and similar dairy articles bring the total up to over a million and a half taels. At prevailing prices in Peking, a catty of good butter will exchange for fourteen catties of rice. This illustrates the advantage which can be obtained by producing a high grade article of commerce even though it might not be consumed at home. No doubt the entire amount now imported would be produced by a number of cows no greater than that now maintained in China if the breed were of an efficient type. Without consuming one blade of forage more,

the rice consumption in China could be increased by the worth of one and a half million taels.

A similar point can be made with respect to canned fruits and jams, of which about one and a half million taels' worth are imported. These products now come from countries where land and labor are much more expensive than in China, and bear in addition the cost of carriage half way round the world. It would be an imagination sluggish indeed which would accept the suggestion that the illustrations just given about exhaust the list. Airplanes are using up all the castor oil. Has any one started planting the castor bean in China? When the clothing world was dictating garments of white because the Germans had all the dyes, was there not a chance for the vegetable dyes of China? The well-read farmer, who one morning in early April sees in his daily paper the Government crop report that fifty per cent of winter wheat has failed to survive the sleet storms, can immediately turn his attention to preparing his fields for spring wheat instead of for corn. But the illiterate peasant can do nothing of this sort. Would it not pay the Chinese Government Railways to provide an expert who should follow events such as these so as to put the man power and the acres of the Chinese farms to producing the crops which will bring to them and to the community the largest returns from the markets of the world? This comes under the head of encouragement of specialization, mentioned in the outline above.

During the past few years in the rest of the world we have been admonished to "cut out" the middleman and thus reduce the price of living. We haven't obeyed very much and the cost of living certainly has not declined. But the express companies in America woke up one morning not many years ago and found that the Interstate Commerce Commission had cut their rates almost in half and that during the same long night Congress had provided a most formidable competitor in the shape of a parcels post to be conducted by the post office department. It was a cruel shock. It was really difficult for these express companies to find an excuse for living. One leading company actually did wind up its affairs. But some of the more hardy survivors decided to eke out an existence if possible by assisting in the capital operation on the middleman. A considerable traffic was created by the establishment of a marketing department which registered lists of both consumers and producers, determined the reliability of each, attended to shipments, deliveries, collections, and payments. Perhaps something of this nature could be developed in China. Who knows? Has any one ever looked into the subject?

Perhaps any plan of this nature would have to be accompanied by an adaptation of equipment to the special needs of the commodities to be shipped. Adaptations of this kind surely would be profitable in some respects. For instance, the large, good-flavored oranges in Peking cost six coppers each. The same orange in Ichang, not far from where it grows, costs one copper. Five coppers have been added to the cost of that orange by middlemen, losses from spoiling, and transportation. In California a similar fruit has a value at the initial packing house of about one cent each. By means of the pre-cooling plant, the refrigerator car, and methods of meeting the market, that orange is carried across the continent and sold in Chicago, New York, Quebec, even Halifax, for twenty-five cents a dozen and in rare cases, only, for more than three cents each.

The orange market was studied out something like this. The purchasing power of a people may be represented by a pyramid. Those at the top who can afford to pay a high price are rather few in number. If oranges are fifty cents a dozen they are articles of extreme luxury, indulged in only infrequently except by the wealthy class who comprise perhaps not more than a million individuals. If oranges can be sold for twenty-five cents a dozen they will become an article of diet for all except the very poor. Ninety million people could eat them freely. Better a sale of ninety million dozen at a profit of five cents a dozen than only one million dozen if the profit were as high as twenty cents a dozen. The problem was how to reduce the price to twenty-five cents a dozen and still leave a profit of five cents.

Pre-cooling and the refrigerator car have done much so to minimize decay that practically one hundred per cent of shipments are sales. But the methods of marketing has perhaps even more to do with it. Oranges are loaded before they are sold. They have already been carefully graded. As a rule only one grade is loaded into a car. If more than one grade is put in, the number of boxes of each kind is recorded on the bill of lading and the waybill. The car is consigned "to order" at some point three or four days away from point of origin in the direction of expected destination. Then a market is sought by telegraph. The number of the grade and the name of the packer or his trade-mark is guarantee of quality or of responsibility if, in case of accident, the quality should fall below grade. Bids are made by dealers in various cities according to the state of the market. Wherever the bid is highest, be it Topeka, Detroit, Washington, or Montreal, there the car is sent by means of a "diversion order," which the shipper issues to the railroad and which is telegraphed by the railroad to the destination originally named in the waybill. In this way the fruit is moved expeditiously to the market where it is most wanted. Gluts are avoided and famines averted. There is no such thing as dumping good fruit into the river in New York while Philadelphia suffers from want of it. The whole marketable crop is sold.

If in China such arrangements could be made as to reduce the price of the six-copper orange to three coppers, is it not probable that such an increase in consumption would result that even if the Ichang producer received only one copper each, the same as before, his profits would be greater? If so, the railroad would receive all this additional business, also the haul of the additional goods that the Ichang producer could now afford to buy,—and we would all have that many more oranges to eat. By such steps is national progress made.

This brings to the foreground another phase of this subject. If by some means like those enumerated above, the railways of China could build up their traffic in agricultural products, not only would they increase their own profits and contribute to the material well-being of that most numerous and most fundamental class of society, the farmers, but they would be rendering a service highly patriotic to the nation as a whole.

Probably never before was there a time at which the subject of mere food so much occupied the attention of so many people. At the close of the 1917 harvest the store of wheat was said to have been 25 per cent short of normal. The winter just past has been one of the most unfavorable for the fall sowings. Of the principal substitute, maize, forty per cent of the 1917 crop failed to mature. In America meat animals per capita have been declining for several years. It is said that the world supply has decreased 115,000,000 head since 1914. We have heard a great deal about the increased cost of living in various parts of the world. China has not been free from the same experience. Currency questions may be involved somewhat but there are other influences more concrete and more immutable. Coincident with the rise of industry has been a phenomenal growth of cities—a perfect rush from the country.

Simple enough, then, to explain the increase of prices. Production has not increased as fast as consumption. Foreign markets have been forced to get along with a relatively diminishing food surplus. The world is growing smaller. Its grand divisions are moving ever closer together. China is more than ever a part of that world, and the hungry peoples abroad are more than ever demanding that its fertile valleys furnish for their tables. Nor is there any hope that the foreign demand will lessen perceptibly. True, the demand is somewhat abnormal just at present. But the material losses of this war are practically all of them from fields outside of agriculture. Shipping sunk, railroads torn up, cities ravaged, bridges destroyed, arms and motors and munitions used up—all are city products. While the populations of the nations affected are restoring these things to the fabric of society as it existed before the war, they will have to be fed just the same as they have been during the war.

A land that imports rice to the value of twenty million taels per annum naturally does not have much food to spare. But as the demand for foodstuffs grows more insistent in the rest of the world, more and more of the Chinese surplus, which finds its way to ports, will find markets abroad. This will inevitably drive prices ever higher in China. It is a cruel thrust to suggest that China may possibly have troubles yet to taste, but imagine food prices doubling within the next two or three years! The purchasing power of the coolie will certainly not double within that time. What is the answer? The highest civilization is said to be only three meals removed from savagery.

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

South Manchuria Railway Express Suspended.—The South Manchuria Railway Company has given notice that, owing to the suspension of the Express Train Service between Europe and the Orient, with no immediate prospect of its resumption, all the Express Trains in South Manchuria and Chosen have been discontinued until further notice.

Through Parcel Traffic.—Hitherto no through passenger tickets have been issued between the South Manchuria Railway and the Ssupingkai-Chengchiatun Lines. Not only the passengers have to buy tickets for the connecting Railway at Ssupingkai Junction Station before the train starts in forty minutes' time, they have to book their baggage also anew.

On and after June 1, through tickets between the two Lines are to be issued with the time of stop at the Junction Station being lengthened to one and half hours. Needless to add, the passengers' baggage will be looked after by the Railway people, and we further understand that a through parcel traffic will be inaugurated at the same time.

The Lung-Hai Railway.—There is a report of the taking up of the long delayed Lung-Hai Railway. In times of peace this railway was of absorbing interest but it was impossible to find out what was actually being planned by the real authorities. Several widely divergent routes had been most carefully surveyed but no one has ever been able to say where the road would finally reach tidewater. It is a matter of common knowledge that the whole amount of the loan was paid over to the Chinese Government but was used by President Yuan Shih-kai to put down the Second Revolution and has never been replaced. It would be interesting to know where the funds are to come from now. We understand the road is to follow the survey which runs almost due east from Hsuchowfu.

Freights and Roubles.—Officials of the Chinese Eastern Railway were sent down to Kwanchengtzu and Changchun to make investigations on the ground as regards the Railway freight rates. Owing to the rise of roubles, only a small amount of goods is being forwarded to Harbin, creating a dearth of supplies at Harbin.

Landslide in Manchuria.—An extra goods train in Antung was running through a cutting between Tsaohokou and Tungyuanpu at some seventy-eight miles from Mukden at 6.05 p.m. May 20 when a land-slide occurred. The locomotive was derailed and the first and second cars were badly damaged; the third car was buried beneath the earth, while the fourth and fifth cars running up on the entombed one shattered it; the sixth car was derailed. Both driver and stoker escaped unhurt.

Osaka City Tramway.—The authorities of the Osaka Municipality have issued particulars of the operation of the municipal tramway as requested by the Investigation Committee and the report shows the present condition of the department clearly. Here is a brief statement:—

Number of Cars.—On the 15th of March, 1918, the city had 450 single truck cars and 150 bogie truck cars, the total being 550 out of which 380 cars are running daily. It is hoped to increase this to 420.

Number of Staff and Employees.—948 Conductors and 800 Motormen (or 1,748 in all) are employed, and 500 pupils are under training. At the end of June they may be increased to 2,150 men for 450 cars. The traffic is increasing steadily and 450 cars will give the citizens satisfaction.

Number of Cars Running.—On the 13th of March, the South-North line had a maximum of 71 cars running (between 4 and 5 p.m.) and Sakai line 73 cars running (between 4 and 5, and 5 and 6 p.m.) that is to say a car runs every 50 seconds. On a holiday (15th of March), the former line had 77 cars (between 2 and 3 p.m.) and Sakai line 80 (between 1 and 2 p.m.). It is expected to have a car running every 40 seconds towards the end of June.

Accidents.—1915, 2,016 (9 deaths and 3 disablements; 1916, 2,282 (8 deaths and 1 disablement); 1917, 2,011 (11 deaths and 2 disablements); 1918 (in January) 258 (2 deaths).

SHIPPING

Shanghai's First Concrete Ship.—A 125 ton ferro-concrete ship was launched by the Yangtzepoo Dock for Arnhold Bros. and Co., Ltd., Friday May 24. Vessels of this size can be turned out in approximately three weeks. The dimensions and other particulars of the boat are as follow: Length, 65 ft.; beam, 15; moulded depth, 6.6; twin screws, 30 H. P. "Speedy" kerosene motors; speed, about eight knots per hour; thickness of hull and deck, 2½ in.

Windjammers for the Orient.—Mr. L. Everett of Shanghai, vice-president and general manager for the Far East of Struthers and Dixon, Inc., ship agents and operators, has opened offices in Manila and has announced that four big sailing vessels of the company will be used in Pacific trade. The first left San Francisco March 9. The Monongahela leaves San Francisco late this month, and will be followed by the Parahoc and the Moshulu. The ships allotted by the Federal board have a tonnage capacity of 20,000 tons and preference will be given cocoanut oil and hemp from the Philippines for cargo.

The head offices of the company are San Francisco.

Tenyo Maru United States Transport.—The Japanese liner Tenyo Maru of the Toyo Kisen Kaisha service will enter the United States Government service as a troop-ship on its return from its present trip to Kobe.

New Seattle Company.—Japanese merchants at Seattle propose establishing a shipping company, probably under the style of the Americo-Japanese Steamship Company, on a capital of Y.50,000,000.

The promoters intend to call up half the capital on the establishment of the new company to buy two steamers of 6,000 tons and to charter five steamers of about the same size. These will be employed for transporting cargoes between Japan and America, but the service will be extended to the South Seas and India later.

The head office will be located at Tokyo with branches at Seattle, Yokohama, Kobe, and later at Singapore.

Dutch Service Renewed.—The Nederland and Rotterdam Lloyd Royal Mail Line has resumed its service as before, with seven steamers. As the result of an arrangement which has evidently been made with the Allies, the Wilis, 8,000 tons, will arrive at Yokohama from Hongkong via Nagasaki about June 3, and the Rembrandt, 10,000 tons, will follow within a fortnight, according to a dispatch from the office at Hongkong received yesterday at the Wiersum Shokai in Yokohama.

The steamers which will be put on the service are the Rindjani, Oranje, Kawi, Vondel and Grotius and the two ships mentioned above, say the local agents.

It is also reported that the Netherlands Royal Packet Company has decided to revive the lines between Java and Japan and Java and Saigon. It has six 2,000-ton vessels, and will divide them equally between these two lines to import rice from Saigon, and to export sugar to Japan.

Four Dutch steamers now in Holland, averaging 4,500 tons, will soon be added to the Pacific routes. They will touch Australia, the Philippines and China. The vessels belong to the Van Ommeren Corporation. Headquarters offices have been engaged at San Francisco.

Daigen Maru Launched.—The Yokohama Ironworks launched the Daigen Maru, a steamer of 1,800 tons deadweight, May 8. This is the first steamer to be launched since the Ironworks were taken over by the Uchida Kisen Kaisha, of Kobe, last year. At present the Yokohama Ironworks have two stocks for the construction of vessels of a maximum of 5,000 tons. The management has lately undertaken the erection of another stock to build vessels of 8,500 tons.

Nippon Yusen Kaisha Dividend.—The Nippon Yusen Kaisha called a semi-annual meeting of shareholders Thursday, May 28, when dividends of 50 per cent per annum were declared. The company's gross profit for the term ended March 31 amounted to Y.47,170,263. Of this amount Y.2,355,563 is to be set aside as reserve against the depreciation in the fleet or other properties. As war profit tax at home and overseas Y.11,153,540 is also deduced from the gross profit. The net profit thus comes up to Y.33,628,329, again of Y.4,640,000 over the preceding term.

The Chefoo Breakwater.—The Chinese Government has agreed to make a monthly appropriation of Customs revenue to the Chefoo Harbor Improvement Commission of Tls. 111,400 during nineteen months from January

THE FAR EASTERN REVIEW

COMMERCE :-: ENGINEERING :-: FINANCE

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A Low Grade Route to Szechwan

The Most Inaccessible Province in China Promised a Commercial Outlet by Rail

The province of Szechwan in Western China is geographically the most isolated district of any importance in China. Every approach to this great territory, which supports a greater population than that of the British Isles, is barred by high mountain ranges over which there are a few trails for the convenience of porters and pack animals but no roads that are open even to the massive and enduring Chinese carts. The only natural trade artery is the Yangtze River and, in its course from Szechwan to the plains of Central China, the Yangtze runs 500 miles through narrow gorges, full of rocks, rapids, and whirlpools which take a huge toll of lives and merchandise, and are impassable to all but very small steamers and native boats. In spite of its great population Szechwan overproduces enormously and its wealth in products has forced it into trade with the plains, and has built up a traffic over mountains and rapids which is surprisingly big. The wealth derived from exports has created a demand for imports and with ready money to offer Szechwan has been able to entice merchants from the Coast past all obstacles and to enjoy all the luxuries of Shanghai or Canton in its isolation.

After one has been towed up the rapids by coolies for sixty days and has come upon some of the most attractive and wealthy cities of China, at the end of the ordeal he cannot avoid thinking how much greater the purchasing power if a line of easy communication were opened between Szechwan and the Coast. Railway engineers and prospectors have always been fascinated by the prospect of getting a line into the Chengtu plain. The difficulty of the task was an attraction and the manifest returns upon a successful piercing of the barriers were so promising that many prospective routes were mapped out on paper and at least one practicable route parallel to the Yangtze was surveyed by an American engineer.

It was always believed, however, that the grades would have to be heavy and that operating expenses would therefore be high. A recent preliminary survey by the Siems-Carey engineers, employed by the Chinese Government, which proves that a line can be built from Sinyang on the Peking-Hankow Railway to Chengtu with a maximum grade of one per cent, is therefore something of a triumph.

The Siems-Carey Railway and Canal Company entered into an agreement with the Chinese Government, May 17, 1916, to build 2,600 miles of railway, the routes to be agreed upon after preliminary surveys had been made. Several lines were in prospect and preliminary surveys were made in both North and South China but most of the routes were either unpromising or were found to infringe upon undeveloped concessions held by others. The survey of the Szechwan line is one of those most recently completed and proves that route to be one of the most promising. Whether it is eventually built, or not, the data collected by the engineers is a valuable addition to our knowledge of railroading possibilities in China.

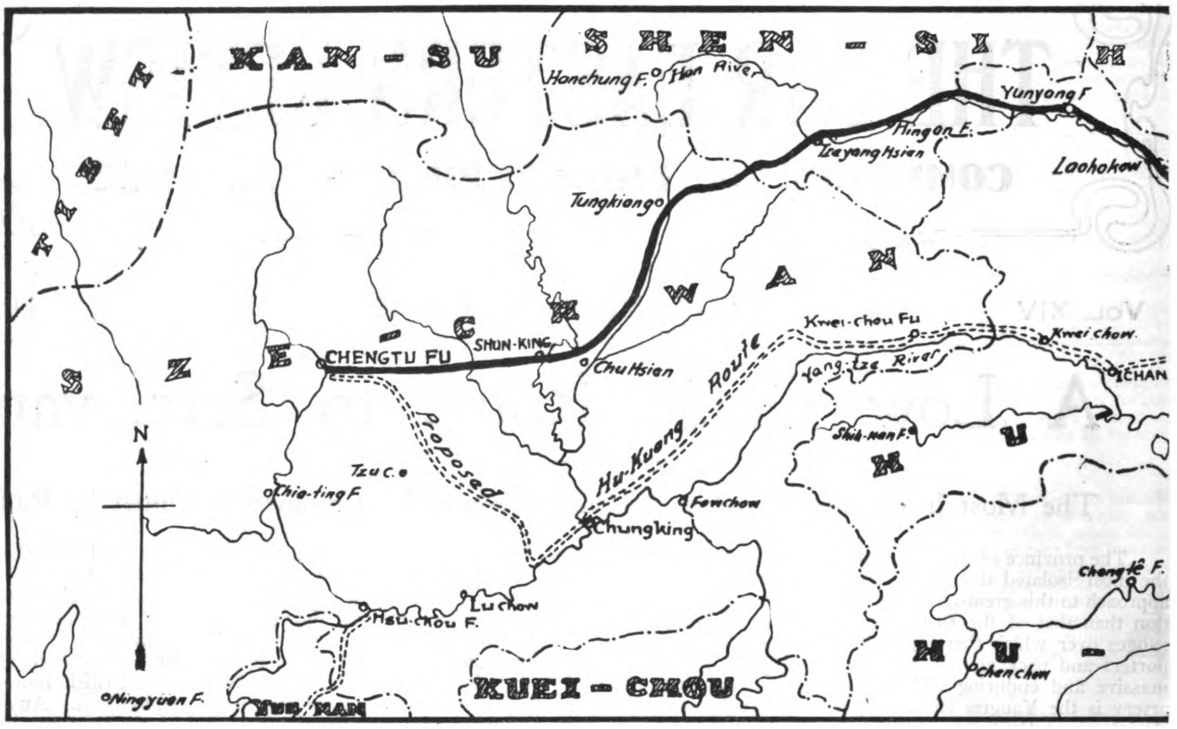
There is little reason to believe that the Chinese Government will question the wisdom of opening up the country which the proposed railway will traverse. A line into Szechwan will make military control over the province possible and would enable the Government to forestall the predatory invasions of the Tibetans and the Yunnanese and to bring order out of such chaos and anarchy as now prevail in the West. The British, however, have a prior claim and may be disposed to emphasize it. An agreement signed before the war gives the British the right to build a line from Pukow, on the Yangtze River, opposite Nanking, to Sinyang in Hunan, with rights of extension. The proposed American railway, if it starts from Sinyang would virtually be an extension. If it starts from any other point on the Peking-Hankow the future advantage of effecting a junction with the British line and of arranging for through traffic, would be sacrificed; while the difficulty of the transport of material puts the possible evasion of a conflict of interests which might be effected by building from Chengtu toward the Coast, out of the question. It seems much more likely that since the British capitalists interested are not in a position to undertake work on their concession during the war, they will not hold up the work of construction which will be such an immediate advantage to China, but will, upon arrangement, waive their claim to a possible extension which they may not be ready to undertake for many years to come.

Products and Resources of Szechwan

The province of Szechwan, or "Four Streams," is the largest province of China and is one of the most fertile and most densely populated. It has an area of 218,533 square miles, and its population is estimated at sixty to ninety millions. The eastern portion of Szechwan, to which particular interest attaches in connection with the proposed line of railroad, is an immense plateau 200 miles wide, north to south, by 300 miles long east to west, and embraces approximately 60,000 square miles. This section includes the best developed parts of the province of Szechwan. The western portion of the province contains range after range of high mountains which separate China proper from Tibet.

The agricultural products of this province are of the most diversified character. In former years opium was one of the most important crops, but now that the growing of the poppy is forbidden by law it is carried on secretly in remote sections only and to a very limited extent. The large areas heretofore used for growing the poppy are now extensively used for the cultivation of sugar cane, wheat, tea, etc.

Sugar is now the third agricultural product of the province in importance, the wheat grown is milled by machinery and the flour produced is of excellent quality and very white. Tea



PROJECTED RAILWAY TO CONNECT

The heavy black line roughly indicates the route of the projected railway to be built under contract with the Siems-Carey Railway and Canal and Chinese Corporation, work upon which was suspended shortly after the outbreak of war. The road between Nanking and in connection with the

factories are established at Kiungchow, Tienchuan, Jungking, and other points, and the tea business is an important industry.

On account of the protection afforded by the mountains, which encircle the eastern plateau, the climate is mild and warm, and the crops very prolific. The soil is exceedingly fertile. In the southern portion of the eastern plateau the climate is semi-tropical, and as this portion borders on the Yangtze River the atmosphere is charged with moisture. Thanks to these conditions, three harvests are usually gathered each year in this section of the province. The principal crops grown on the eastern plateau are peas, beans, maize or Indian corn, rice, Irish and sweet potatoes, tobacco, millet, and sugar cane. The chief winter crops are peas, beans, wheat, and Irish potatoes; while rice, Indian corn, sweet potatoes, millet, tobacco, and sugar cane are the principal summer crops. Wood oil is also produced in large quantities. Cotton, herbs for medicines, and bamboo are also grown and exported in considerable quantities. Forests of oak, pine, and cypress are found in the northern part of the Kaihsien district. The principal exports from the Chengtu district are silk in its various forms, fibers, hemp, and ramie, grass cloth, sugar, tea, wheat, rhubarb, and medicines; while the northwestern portion of the province exports large quantities of wool, hides, medicines, musk, sheepskins, and furs.

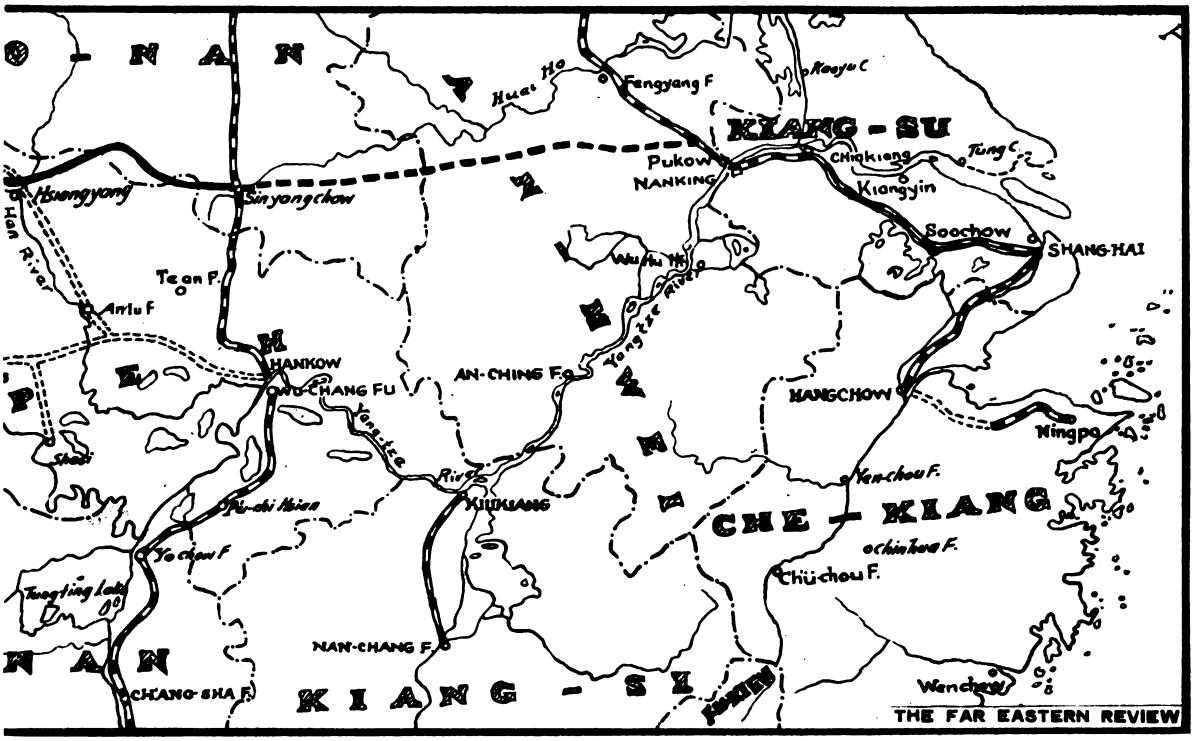
The chief imports are tea, rice, Chinese wines, cotton goods, velvets, shirtings, cotton yarn, drills, braids, boots and shoes, cigarettes, etc.

Minerals

For centuries the province of Szechwan has been famous for its wonderful mineral resources, but up to the present time no thorough investigation has ever been made and no reliable information is available concerning the nature and the extent of the mineral resources of this province. Undoubtedly, in the future considerable attention will be given to the development of mineral resources in this province. The principal minerals found in Szechwan are gold, silver, copper, iron, lead, coal, antimony, salt, mica, jade, saltpeter, gypsum, and quicksilver. In the eastern portion of the province there is an immense area of over 20,000 square miles which consists of horizontal mesozoic and tertiary rocks overlying tilted rocks of the carboniferous age.

Coal and iron are extensively mined in the carboniferous rocks surrounding the Red Basin, as the area referred to is called, while salt and petroleum are obtained within the Red Basin by boring wells varying in depth from 1,700 to 3,000 feet. The Red Basin was formerly the bed of a great lake and in addition to the salt and petroleum, natural gas is also found at various points and is used extensively by the local people. It is said that the chief gas well has been supplying gas for 280 years. Tzeliutsing and Kiatingfu are the centers of the petroleum and salt industry, and although situated only 35 miles apart, there are between 8,000 and 10,000 salt and petroleum wells located between these two places. At Tzeliutsing there are about 3,000 of these wells producing 400 tons of brine and 100 tons of oil per day. The brine is a saturated solution which by evaporation yields about 20 per cent, or 70 tons, of clean white salt per day. These wells take from one to three generations to sink, it being said that no well has been sunk in less time than 30 years. The methods used are very crude and primitive; the brine and oil are run through settling tanks where separation is effected by specific gravity. The natives consider the brine more valuable than the oil; in fact, if the well produces over 50 per cent oil it is not considered worth operating, as the demand for salt is far greater than the demand for oil.

The coal found in the Kaihsien region is said to be of good quality and very abundant. It is used largely in the evaporation of the brine. The iron ores are hematite and limonite of high grade, although the extraction is low, averaging about 45 per cent. These ores are smelted in coal and charcoal furnaces, limestone being used for fluxing. The product is exported as pig iron.



SZECHWAN WITH THE SEA

Company. The blocked line between Sinyangchow and north of Pukow, indicates the railway which is being built in agreement with the British Shanghai is in operation. The double dotted line running eastward from Chengtu along the Yangtze to Hankow is projected Hukuang Railway agreement.

From the Chienchang Valley, through which flows the Anning River, on the east to the Tibetan frontier on the west, and from Tatsienlu on the north to the Chin Sha River on the south, there is a section of country with an area of 40,000 square miles which is said to be without doubt richer in mineral wealth than any part of China, and one of the most highly mineralized sections in the whole world. This region is full of lodes and veins carrying gold and metallic ores, while the streams and rivers contain many deposits of alluvial gold. The lodes are worked in a very primitive way under Chinese supervision. The alluvial gold has been washed for hundreds of years, there being 15,000 men at times engaged in this work in the sands and bars of the Yalung River. The most important gold mine in this section is known as the Maha, which has been worked for the past twenty years. There are also found in Sichang District veins carrying ores of gold, copper and lead, also ores running high in silver. These ores are also found in various other places to the north and south of the Sichang District.

Products

The products of the province of Szechwan for the year 1914—the last normal year—are given below under the four classifications: Agricultural Products, Fruit and Nut Products, Miscellaneous Products, and Mineral Products.

The principal agricultural products were: rice, 10,185,618 tons; peas and beans, 1,905,962 tons; wheat, 1,112,393 tons; sugar cane, 912,915 tons; and sweet potatoes, 905,551 tons. Agricultural products totaled 16,152,895 tons, and were valued at $1,177,364,136 Mex.

The chief nut and fruit products were peanuts, 23,907 tons, and oranges, 30,759 tons. The nut and fruit products aggregated 80,031 tons, valued at $4,164,704.

The miscellaneous products totaled 44,608 tons and were valued at $62,709,185.

The principal mineral products were coal, 314,375 tons; salt, 29,262 tons; and iron, 8,053 tons. The mineral products amounted in all to 355,546 tons valued at $4,403,836.

The grand total of all products of Szechwan for 1914 was 16,633,080 tons, valued at $1,248,641,861 Mex.

Agricultural Products in 1914

Name of Product	Tons	Value
Rice	10,185,618	$ 691,562,501
Wheat	1,112,393	114,929,602
Buckwheat	263,657	9,020,477
Maize	747,782	108,505,456
Sweet Potatoes	905,551	7,512,456
Peas and Beans	1,905,962	162,306,672
Rapeseed	47,756	1,933,965
Mustard	42	1,200
Ginger	1,949	307,965
Sugar Cane	912,915	5,042,477
Cotton	8,415	5,359,552
Tobacco	60,855	70,881,813
Total Agricultural Products	16,152,895	$1,177,364,136

Fruit and Nut Products in 1914

Name of Product	Tons	Value
Chestnuts	482	$ 33,296
Peanuts	23,907	2,735,103
Nuts	1,932	123,129
Olives	7,846	81,642
Pears	7,336	215,821
Apples	63	921
Peaches	5,010	13,594
Raisins	365	16,496
Plums	212	10,564

Name of Product	Tons	Value
Cherries	660	$ 23,146
Buddhas Hand	60	6,299
Azaroles	3	448
Oranges, and Mandarin Oranges	30,759	855,351
Pomegranates	1,231	34,746
Quinces	165	13,905
Strawberries	——	225
Total Fruit and Nut Products	80,031	$4,164,686

Name of Product	Tons	Value
Platinum	660	$ 7,661
Lead	66	5,066
Lime	2,013	14,366
Nitrate	10	2,936
Coal	314,375	2,243,288
Antimony	——	3,942
Salt	29,262	1,598,528
Total Mineral Products	355,546	$4,403,836

A Yangtze River Rapid, Szechwan

Miscellaneous Products in 1914

Name of Product	Tons	Value
Pig Bristles	1,561	$ 843,100
Indigo	4,664	9,027,983
Medical Plants	17,844	2,892,161
Chinese Wine	45	7,816
,, Alcohol	9,873	9,095,047
Stocks, etc., for paper	4,728	4,728,455
Native Soap	437	131,177
Leather Skins	3,600	19,888,759
Silk	1,570	15,897,757
Wool	286	196,930
Total Miscellaneous Products	44,608	$62,709,185

Mineral Products

Gold	——	$ 24,039
Silver	18	1,209
Copper	1,089	176,852
Iron	8,053	325,949

Summary of Products in 1914

Products	Tons	Value
Agricultural	16,152,895	$1,177,364,136
Fruit and Nut Products	80,031	4,164,704
Miscellaneous Products	44,608	62,709,185
Mineral Products	355,546	4,403,836
Total Products of Szechwan Province	16,633,080	$1,248,641,861

Import and Export Tonnage for Szechwan Province Handled via the Yangtze River Route

No complete record of the details of all imports and exports for Szechwan province is available but the principal route into and out of the province is the Yangtze River and the bulk of the tonnage, both import and export, is handled via this route, and passes through the ports of Ichang and Chungking. Some imports come into the province by transit passes.

Statements Nos. 1 and 2 show the approximate tonnage for both imports and exports handled via the Yangtze River for the year 1914, the last normal year before the war, and will give a rough idea of the traffic at that time. Since then the figures have varied so much that they are of but little value as they do not reflect normal conditions. All tons are short tons of 2,000 lbs.

Statement No. 2 shows that for the year 1914 the approximate import tonnage via

the Yangtze River route was	138,483 tons
and the export tonnage was	323,126 „
making a total of	461,609 tons

and it may be assumed that if the total record for the whole province could have been obtained it would not have been far from 500,000 tons.

The total production of the province was during the same year 16,633,080 tons, which indicates that only about two per cent of the total production was exported from the province. The export tonnage would no doubt be greatly increased if adequate railroad facilities were furnished the province.

MAP OF SZECHWAN, SHOWING MINERAL RESOURCES

Summary of Tonnage via the Yangtze River During the Year 1914

(Taken from Chief Engineer Randolf's Report on the I-Kwei Railway)

From a study of the records of the Maritime Customs, Transit Passes, and Shipping Companies at Ichang, it appears that for the port of Chungking there entered and cleared from the west or upriver points 47 steamers and 23,879 junks, and that the 47 steamers carried 5,520 tons.

In order to get the total tonnage of the 23,879 junks it is necessary to take the total number of junks; viz., 41,253, that cleared both east and west, or down and up the river, with their total tonnage; viz., 789,342 tons, and divide the total tonnage 789,342 tons by the total number of junks 41,253 to arrive at the average tonnage per junk, which is 19.10 tons. Then the total upriver tonnage from and to Ichang will be approximately 23,879 junks averaging 19.1 tons each, equaling 486,089 tons. Summarizing the foregoing figures the total dead weight tonnage to and from Ichang both up and down the river operating west of Ichang will be as follows:

Statement No. 1

47 steamers at 100.4 tons each	5,520 tons
23,879 junks at 19.1 „ „	456,089 „
Total tons including both import and export tonnage	461,609 tons

The above tonnage is divided, as to imports and exports in the following manner:

Of the above total tonnage, 461,609, it was possible to obtain a detailed list of the different items that go to make up 181,138 tons, also a division of said tonnage into imports, 52,815 tons, and exports, 128,323 tons, as shown by the following statements —the imports being 29.2 per cent and exports 70.8 per cent of the whole tonnage.

Assuming that the whole of the 461,609 tons would be divided approximately into the same proportion as the 181,138 tons, for which details were obtainable; viz., 30 per cent imports and 70 per cent exports, this total import and export tonnage would be as shown in Statement No. 2 below:

Statement No. 2

Total import tonnage would equal	138,483 tons
„ export „ „ „	323,126 „
Making total import and export tonnage ..	461,609 tons

Statements Nos. 3 to 8 inclusive, give the details of the imports and exports for Szechwan for the 181,138 tons for which details were obtainable.

Partial List of the Imports into Szechwan at Chungking in 1914

Statement No. 3

Description of Goods	Quantity	Unit of Measure	Tons
Shirting, gray and plain	87,368	Pieces	619
Sheeting, gray and plain	4,620	,,	38
Sheeting, white	172,932	,,	920
Drills	2,920	,,	19
Chintzes and Plain Cotton Cloth	16,781	,,	94
Cotton, Italian, plain fast black	14,649	,,	94
,, ,, colored and figured	81,308	,,	544
,, Venetian, fast black	17,363	,,	94
,, ,, colored and figured	40,690	,,	225
,, Lasting	4,792	,,	19
Velvets and Velveteens	134,043	,,	56
Cotton Yarn, Indian	145,320	Piculs	9,688
,, ,, Japanese	98,350	,,	6,557
Drills (Steam Factory Products)	58,674	Pieces	281
Cotton Yarn	216,395	Piculs	14,426
Cloth, Broad, Medium, etc.	21,728	Yards	38
Copper Ingots and Slabs	29,220	Piculs	1,948
Tin in Slabs	998	,,	56
Bisho Ware	1,284	,,	75
Braid, fancy and cotton	53,991	Hk.Tls.	169
Cigarettes	23,350	Pieces	75
Clocks and Watches	12,883	,,	150
Cuttlefish	3,075	Piculs	300
Analine	199,062	Hk.Tls.	826
Indigo, artificial	4,669	Piculs	311
Genseng, American and Japanese	28,869	Catties	19
Lamps and Lampware	68,637	Hk.Tls.	70
Machine, sewing and knitting	626	Pieces	47
Medicines	194,446	Hk.Tls.	10
Needles	769,262	Milles	10
Oil Kerosene, American	119,610	Gals.	478
Pepper	2,399	Piculs	159
Seaweed and Agar-agar	24,064	,,	1,604
Soap, toilet	42,832	Hk.Tls.	50
Socks, cotton	73,209	Dozen	50
Soda Ash	32,449	Piculs	2,163
Umbrellas	126,901	Pieces	80
Chinese Sundries			
Candles	1,146	Piculs	76
Cassia Twigs	5,907	,,	393
China Root	2,883	,,	192
Chinaware	2,694	,,	179
Cigarettes	988	,,	66
Medicines	370,684	Hk.Tls.	20
Pipes (tobacco), white metal	52,581	Pieces	1
Total			43,289

Imports from Ichang by Transit Passes

Statement No. 4

Description of Goods	Quantity	Unit of Measure	Tons
Oil, Kerosene	1,777,100	Gallons	6,614
Seaweed	13,047	Piculs	870
Iron and Steel	3,229	,,	215
Sugar	5,059	,,	338
Cotton Socks	1,923	Pieces	1
Fans	387,440	,,	300
Needles	1,450,000,000	,,	96
Dyes	16,600	Drums	1,107
Bagging	7,200	Pieces	25
Total			9,566

Summary of Imports

Statement No. 5

From Chungking through Maritime Customs	43,289	tons
,, Ichang via Transit Passes	9,566	,,
Total Imports known	52,855	tons

Partial List of the Articles Exported from Chungking in 1914

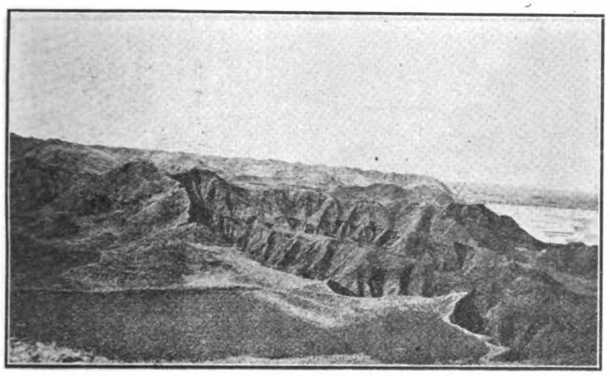
Statement No. 6

Description of Goods	Quantity	Unit of Measure	Tons
Bristles	16,019	Piculs	1,068
Cereals Wheat	63,519	,,	4,237
Feathers, Duck Fowl, etc.	6,631	,,	442
Fibers Hemp	33,387	,,	2,226
Fungus	10,611	,,	707
Grass Cloth	5,834	,,	389
Hides, Buffalo and Cow	30,042	,,	2,003
Intestines	2,120	,,	141
Medicines	1,592,149	Hk. Tls.	1,560
Musk	1,769	Catties	1
Nutgalls	14,555	Piculs	970
Rhubarb	12,663	,,	844
Silk, raw, white, not rereeled and not steam filature	308	,,	21
Silk, raw, white, steam filature	131	,,	9
Silk, raw, yellow, not rereeled and not steam filature	8,703	,,	580
Silk, raw, yellow, steam filature	2,021	,,	135
Silk, raw, wild	290	,,	19
Silk Cocoon, refuse	19,316	,,	1,288
Skin, Fur, Goat, untanned	1,032,944	Pieces	1,539
Tallow, vegetable	18,427	Piculs	1,229
Tobacco Leaf	4,410	,,	297
Turmeric	35,844	,,	2,392
Wax, white	4,314	,,	288
Wool, sheep	34,389	,,	2,299
Shoes and Boots	32,407	Pieces	70
Silk Piece Goods	280	Piculs	19
Umbrellas, cotton	33,158	Pieces	70
Total			24,843

Exports from Szechwan Through the Customs at Ichang in 1914

Statement No. 6—Continued

Description of Goods	Quantity	Unit of Measure	Tons
Beans, all kinds	31,278	Piculs	2,085
Books, printed	376	,,	25
Bristles	169	,,	11
Rice, duty free	27,337	,,	1,822
Rice, duty paid	1,632	,,	109
Wheat	34,654	,,	2,310
Charcoal	4,621	,,	308
Coal	30,705	,,	2,047
Coer and Con, ware	5,434	,,	362
Cotton, raw	20,002	,,	1,334
Feathers, Duck, Fowl, etc.	551	,,	37
Fiber, hemp	10,411	,,	694
Fungus	1,861	,,	124
Hides, buffalo, cow	19,895	,,	1,326
Lamp, black soot	48	,,	3
Lard	535	,,	30
Mats, bamboo	15,200	Pieces	44
Medicine	48,089	Hk. Tls.	20
Nutgalls	11,098	Piculs	740
Oil, wood	22,449	,,	1,497
Rapeseed	100	,,	7



EROSION OF EARTH BLUFFS ON THE HUAIHO, MILE 15

FREIGHT AND PASSENGER TRAFFIC, MILE 30

Seed, sesamum	17,248	Piculs	1,150
Seed Cake	17,875	,,	1,198
Silk, raw	75	,,	5
Silk, cocoon refuse	414	,,	28
Skins, fur, goat, untanned	12,000	Pieces	200
Tallow, animal	1,485	Piculs	99
Tea, black	15	,,	1
Tobacco Leaf	1,214	,,	81
Varnish	8,442	,,	563
Wax, vegetable crude	4,146	,,	275
Total Export of Ichang			18,361

Exports into Szechwan Province Under Transit Passes

Statement No. 7

Description of Goods	Quantity	Unit of Measure	Tons
Salt	1,171,409	Piculs	78,093
Human Hair	12,907	Pkgs.	2,531
Cow Glue	247	,,	115
Crucibles	1,937	,,	172
Lead	4,427	Bars	157
Vegetable Goods	34,645	Pkgs.	2,772
,, Cakes	11,003	,,	1,024
Vegetable, salted	6,114	,,	205
Raffia Grass	116	,,	25
Buffalo Horns	134	,,	25
Total			85,119

Summary of Imports and Exports

Statement No. 8

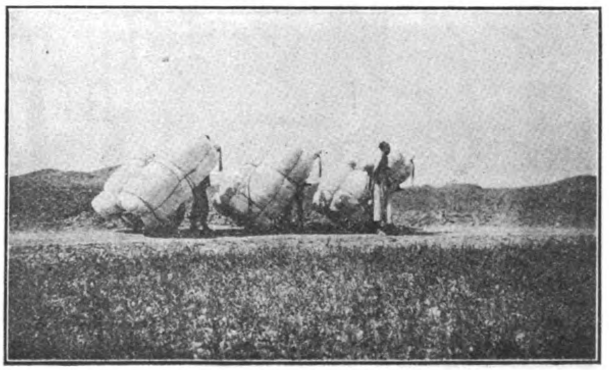
From Chungking, Maritime Customs	24,843 tons	19.4 %
,, Ichang, ,, ,,	18,361 ,,	14.3 ,,
By Transit Passes	85,119 tons	66.3 %
		100 %
Total Exports known	128,323 tons	70.8 %
Summary of Imports	32,815 ,,	29.2 ,,
Total known detailed tonnage	181,138 tons	100 %

Description of the Proposed Route

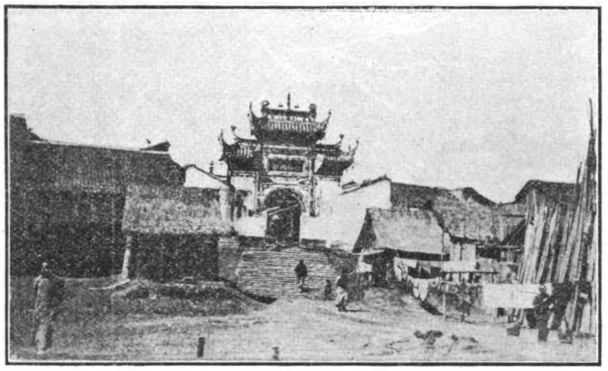
The projected line will begin at Sinyangchow, a station on the existing Peking-Hankow Railway, 133 miles north of Hankow, and will run in a northwesterly direction through a heavy, rolling country, some of which is quite rough. The divide between the Shih River and an easterly branch of the same stream will be crossed by a tunnel 460 feet in length. The bottom lands and some of the hills are very intensely cultivated—thirty per cent of the total area being under cultivation—and the country is thickly populated. The principal crops are rice and wheat, but mostly rice. The hills are generally covered with a small growth of young trees, but no timber of commercial value is available.

It was found necessary to run the line north of the direct course between Sinyangchow and Fancheng in order to skirt a very high and rough range of mountains which lies in the direct line between these two cities, and which forms the boundary between the province of Honan on the north and Hupeh on the south. In addition to the tunnel, considerable rock work will be encountered in construction on this section. Thirteen miles from Sinyangchow a plate girder bridge 1,200 feet long will have to be built over the Yueh River, which will lead the line up the valley of the river through a beautiful farming country, thickly settled

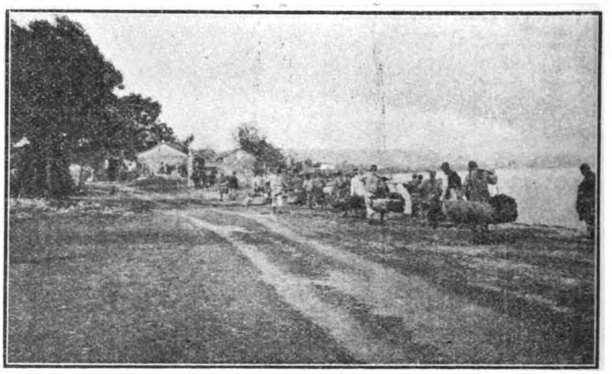
CAST-IRON WHEEL CARTS NEAR KUMIAO



TRANSPORTATION OF COTTON BY WHEELBARROWS, MILE 136



FANCHENG, ALONG THE WATERFRONT, MILE 136



COOLIE TRAIN ON THE MARCH LEAVING HSIANGYANG, MILE 136

and intensively cultivated, approximately forty per cent of the total area being under rice and wheat. The line parallels the main range of mountains which lies to the south, eight to ten miles distant and proceeds in a northwesterly direction through the foothills, passing over a summit thirty miles from Sinyang through a tunnel 400 feet in length. For two miles it follows the summit and then descends to the Huai River, crossing the river over a plate girder bridge 540 feet in length and traversing a rough strip of country, cultivated in the valleys only. To the north of the line there is a large cultivated area under rice and wheat, and from mile thirty-six to mile fifty the line runs along river valleys in a more northwesterly direction, the country to the north being nearly level, intensively cultivated, densely populated, and appearing to be very prosperous. Approximately twenty-five per cent of the country is cultivated. A plate girder bridge 650 feet in length will be required to take the line over the Yueh River at mile thirty-eight, and at mile forty-five another one 480 feet long will be necessary to cross the Huai. Proceeding up the river valley the prosperous town of Tungpai, with a population of 25,000, is passed, and the drainage of the Huai is penetrated to mile fifty-five, where the line crosses the main divide through a heavy rock cut near the village of Kumiao, to the valley of the Yao River. The country generally is rough and hilly, with thickly populated and intensely cultivated valleys.

The line leaves the drainage of the Yao near mile sixty-eight and skirts the foothills of the mountains on the south in a westerly direction, crossing rolling country densely populated and intensely farmed, sixty per cent of the country being under wheat and rice, but chiefly wheat.

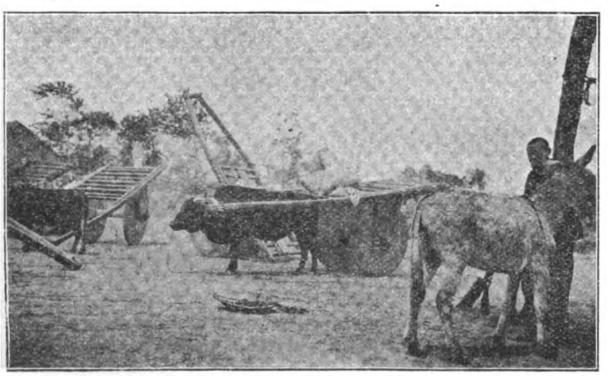
The province of Hupeh is entered at mile ninety-five, near the village of Huyun, the great valley of the Paiho lying parallel and about five miles to the northwest. This valley is an irrigated plain about ten miles in width and extends north about fifty miles. One crop of rice and one of wheat are raised each year. The irrigation system is well laid out and plenty of water is available, thus assuring intensive farming. Ninety-five per cent of the valley is under two-crop cultivation.

From mile ninety-five the line runs in a southwesterly direction across open country, which is practically level and which is one of the most beautiful farming sections that one could see anywhere, to mile 128.5, where it will cross the Paiho on a steel bridge 1,180 feet long. Thence the valley of the Paiho is followed to Fanchang, a flourishing city of 288,000 population, situated on the north bank of the Han River, 136 miles from Sinyang. The city of Hsiangyang (or Siangyang) is also a prosperous one, is located on the south bank of the river directly opposite Fancheng, and has a population of 337,000. Both cities are walled and are centers of considerable commercial importance. They are at the confluence of the Paiho and the Han River.

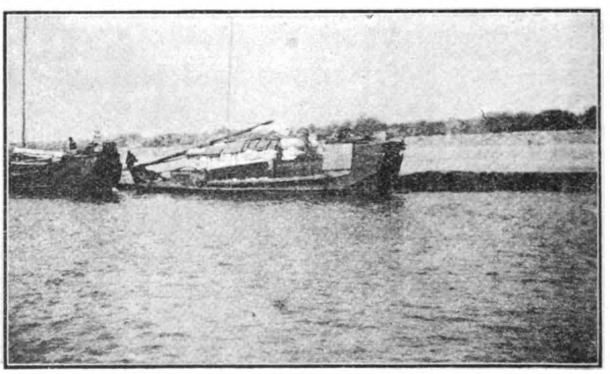
The proposed line through this section traverses a very extensive and prosperous country, densely populated and intensively cultivated, seventy or eighty per cent being under wheat, though considerable rice is grown.

From mile 136 the line runs in a northwesterly direction up the north bank of the Han River, following the valley which is approximately five to fifteen miles in width, densely populated and intensively cultivated. Numbers of prosperous communities inhabit the valley, and grow wheat and rice. At mile 175 the city of Laohokow is reached. It is situated on the north bank of the Han River, and is an important industrial center with a population of 150,000. During high water this point is reached by small power boats and launches from Hankow. Continuing up the Han valley through a very prosperous country the line passes Chunchow (population 40,000) at mile 219, and reaches the canyon at mile 235.

A tunnel 920 feet in length will have to be bored at mile 258, which will bring the line to the city of Yunyang (population 80,000) a mile farther on. From this place wood oil, sesamum seed, oil, hides, straw, paint, fruit, and hogs are exported.



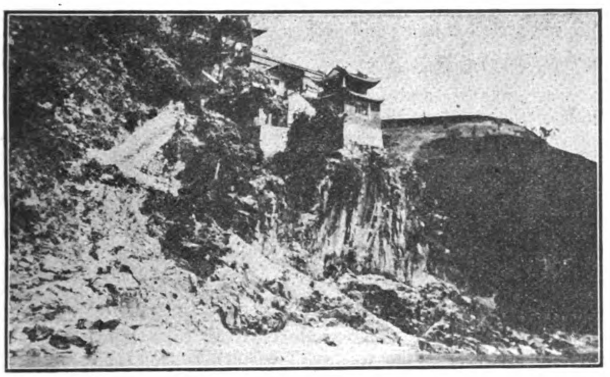
BULL CARTS IN USE AT FANCHENG



TRANSPORTATION OF COTTON BY JUNK ON HAN RIVER

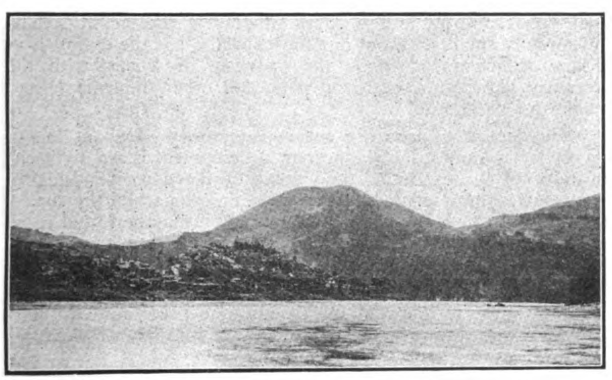
WATERFRONT AT FANCHENG, MILE 136

PAIHOHSIEN ON HAN RIVER, MILE 323

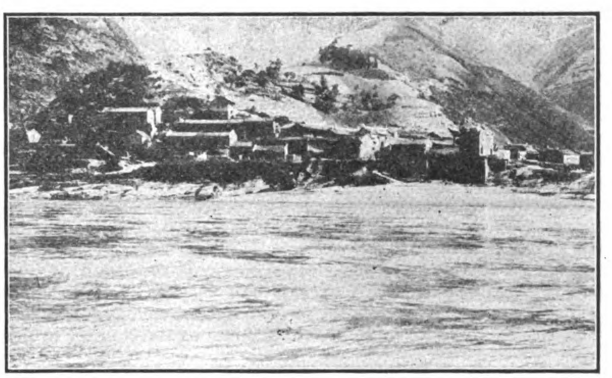


OLD SCHOOLHOUSE, OPPOSITE CHUNCHOW, ON HAN RIVER, MILE 220

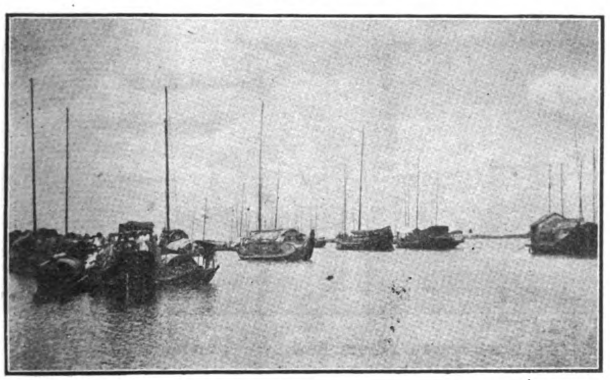
TIENHOKOW ON HAN RIVER, MILE 328



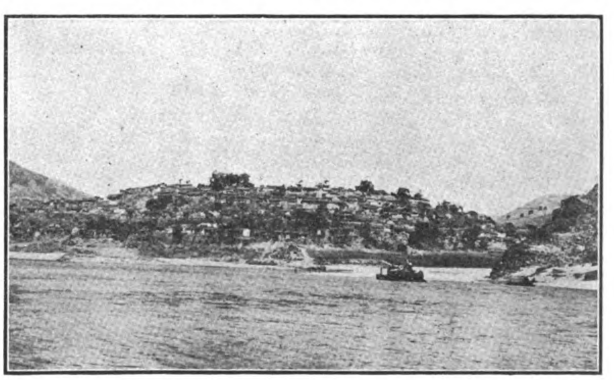
VIEW OF YUNYANG FROM HAN RIVER, MILE 260



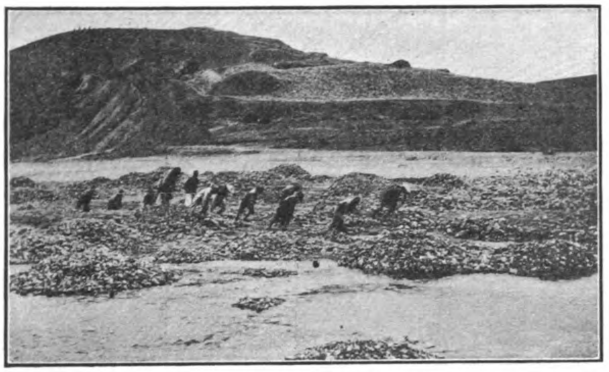
CHIAHOKWAN ON HAN RIVER, MILE 330



SHIPPING ON HAN RIVER AT YUNYANG



HSUNYANGHSIEN ON HAN RIVER, MILE 370



TOWING BOAT UP HAN RIVER, ABOUT MILE 280

UPPER HAN NEAR TZEYANG, MILE 435

Another tunnel 1,700 feet long will be necessary at mile 280, and at mile 291 the line will cross the Han on a steel bridge of 1,800 feet, with another tunnel at mile 282, of some 800 feet, and another steel bridge of 1,600 feet across the river again. The Han valley on this eighty-five mile section is very rough and rocky, and high water forces the grade line up from fifty to seventy or eighty feet above low water, which will necessitate considerable protection work, and will make the cost of construction heavy. The rock is a hard limestone. About fifteen per cent of the country is under wheat and rice.

From mile 320 the line continues up the north bank of the Han to the city of Hinganfu, at mile 394 from Sinyang; and at mile 330 it passes from the province of Hupeh into Shensi. To mile 394 the country is very rough, rocky, and mountainous, and the construction cost will be heavy, as most of the material is hard rock and the slope is steep. The water rises from seventy-five to eighty feet above low water, necessitating protection work of considerable magnitude. Hingan is the *fu*, or prefectural city, of the district, and has a population of 50,000. It is of considerable commercial importance. The area cultivated is small, about fifteen per cent being under wheat and rice. Wood oil, varnish, silk, tan bark, potatoes, Indian corn, sweet potatoes, peanuts, walnuts, etc., are also produced. About mile 400 a change occurs in the geological formation and the work will not be as heavy as in the preceding section. The country downstream from this point is granite and hard limestone, upriver it is fine sandstone and shale, containing small veins of lignite. At about mile 410 there is a large deposit of lignite coal, which is used extensively in the locality. The deposit consists of about twelve veins in close proximity, with a total thickness of about eighty feet. Southeast of Hingan there are large deposits of asbestos of good quality and all the country to the south of the projected line contains veins of lignite of varying thickness. To the northwest of Hingan is the large irrigated valley of Hanyin, about 100 square miles in area. All the rest of the country in the vicinity is mountainous and broken, the ranges being about 4,000 feet above the Han River valley. These mountains are cultivated extensively, although they are very rough and broken. The chief crops are potatoes and Indian corn, which constitute the staple foods of the people. Very little rice is raised, except in the small valleys in the mountain ranges. Tea is also an extensive crop around Tzeyang. The hills are barren of forests but the wood oil and varnish trees are planted where the land cannot be cultivated.

At Tzeyang, mile 434, the line leaves the Han River and follows the Jenho. There is some small junk traffic on the Han for about six months of the year from the Hanchung valley, about 140 miles distant to the west. This valley is an irrigated plain of some 1,000 square miles, and is described as "Paradise" by the Shensi people. The products from this valley and the tributary territory to the west will furnish considerable tonnage to the line at mile 434.

Tzeyang is a city of 35,000 people and is a commercial center for the tea industry of the surrounding country as well as for the local iron foundries and smelters situated in the vicinity. The smelters are small, of about one ton capacity, but the output is at present sufficient to supply the province of Shensi with the necessary plowpoints, cast-iron pots, and other implements and articles for native use.

The deposit of iron ore covers a territory of about ten to twenty square miles, but the present development is not sufficient to judge of the extent of the volume of the deposit. Judging from geographical contact between the limestone and the shales, it is possible that the deposit of iron ore may be found to be large. Construction through this section will be heavy rock, canyon work, in order to avoid high retaining walls as protection against maximum high water.

The Jenho is followed for twenty-nine miles, and the line then follows a branch stream called the Malipa creek from

HUNGKOUTANG ON HAN RIVER, MILE 385

APPROACHING YUTUPA SUMMIT, ABOUT MILE 496

NATIVE IRON SMELTER TEN MILES NORTH OF CHWANPING

VILLAGE OF MALIPA, LOOKING SOUTHWEST FROM MALIPA DIVIDE, MILE 470

CHUCHIAPA FIFTEEN MILES UP JENHO FROM CHENGKOU

twenty-two miles to the mouth of a small stream that crosses the divide, about three miles distant. The country along the Jenho is somewhat similar to that along the Han below Tzeyang, with the exception that the sidehills are much more even and direct, with no sharp bends, although the river is very crooked. The bends are such that ten degree curves will fit the contours well in most cases. The last three miles in this valley are just on the Szechwan-Shensi border. The river passes through a bad box canyon, but the benches in the canyon are such that the line can fairly well be laid on them. In order to do this, however, several short tunnels will be necessary, and the work for some distance will be heavy. The Malipa creek for the first three miles runs through a small narrow gorge, very direct in alignment, with sidehills averaging about fifty degree slopes, and running to an elevation of about 2,000 feet above the river. Although the aspect of the gorge is very unfavorable, the grading work will not be excessively heavy.

Continuing in a northwesterly direction to mile 500 the creek is very direct and fairly well open with gentle sidehills on the north side, which are not badly broken by side drainage. This creek lends itself well to a supported grade which will be necessary if the one per cent line is used. The general character of the country on each side of the line is mountainous and very broken, as is generally the case on the boundaries of the provinces. The mountain ranges average about 5,000 feet elevation, or approximately about 3,000 feet above the river. These mountains are cultivated where possible, and places that are too steep for cultivation are used for tea plants, wood oil trees, varnish, and walnuts. Considering the mountainous character of the country it is intensively cultivated though the area under cultivation would not, probably, amount to more than fifteen per cent of the total area. Coal is mined locally in small quantities, but is of the lignite class and is not of much commercial value.

The valley of the Jen River farther up will contribute considerable freight from the city of Chengchow (population 10,000) and vicinity, as the valley is about thirty miles long by one-half mile in width, irrigated and intensively cultivated, producing two crops per annum. There are indications that the mining industry may also develop, as asbestos, iron, and coal are found in this locality.

The last fifteen miles of the section consist of additional distance required for obtaining a maximum one per cent line. The country is such that it lends itself to any development necessary, as the supporting sidehills on the south side are smooth.

From mile 500 to mile 505 is located the main summit tunnel and its approaches. The main divide between the Han and the Yangtze River extends in a general northwesterly direction, and at this point the drainage is parallel to the divide until it breaks through a low sub-range and then flows at right angles to the main divide on both sides. The ridge of the divide is an immense fold of strata, having shale and sandstone on the north and the south faces and hard blue limestone in the center. The shale, which is about 1,000 feet thick, stands almost vertically on both faces of the limestone core, and has been eroded to such an extent that the present slopes of the ridge are about 35 degrees to 40 degrees, leaving a width across the top of about one mile at the point where the line would probably cross. The elevation at the top of the ridge above the valleys on the north and the south is about 2,300 feet, and by establishing the grade line 1,600 feet below the top, a tunnel approximately two and a half to three miles long will be required. This tunnel is the largest single piece of work on the entire line, but no particular construction difficulties are presented, except for at least 1,000 feet at each end which will have to be lined, if not the whole length of the tunnel, as the general characteristics of the country seem to indicate that the limestone core is hard but shattered by the sharp folding of the strata. The grade elevation can be lowered below the 1,600 feet level by lengthening the tunnel and thus shortening any development necessary on either side to reduce the grade. Detail surveys of this divide are necessary before any exact information can be given, but there appears to be no doubt whatsoever, judging from the information furnished by Messrs. Carroll and Collins, who made the reconnaissance, that a one per cent line can be obtained. By lowering the grade of the tunnel, increasing its length by approximately one-half mile, it may be possible to eliminate about five to seven miles of development. On the south side of the ridge there is no difficulty in obtaining a one per cent grade, as the country is rolling and the die hills are smooth with little elevation to overcome in reaching

the floor of the valley. There is considerable water power available in the immediate vicinity of the line, which might be used to advantage in construction.

A general description of the country from mile 505 to the Chengtu Plain, mile 884, is necessary in order to give an idea of the general character of the country through which the line would pass between those points, as this entire section of country is all very similar in character.

Eastern Szechwan is an immense basin of red shale and sandstone, with a central plateau flanked on all sides by an uplift of limestone, which breaks through the red shale forming the mountain ranges encircling the basin. In most cases the shales are about vertical where the fold takes place, but quickly assume a horizontal stratification throughout the entire basin. There are a few local folds in the central basin where the limestone protrudes. Wherever the folds take place the coal veins are exposed and are worked by the natives on a small scale. The coal is a very good grade bituminous coal of the coking variety, and underlies the red shale and sandstone, and is also found in the upper strata of limestone. Judging from the general character of the country and the condition of the exposed deposits of coal, it appears that the entire central basin in all probability contains coal. The deposit of coal, however, may be at some depth below the present ground surface of the basin. The stratification of the central basin, or plateau, is horizontal, and generally speaking, is not broken or folded, although the table-land is very badly eroded. Four large rivers cut through this basin in a southerly and southwesterly direction, leaving ridges between the rivers which vary in height from 1,200 feet on the north to about 700 feet on the south above the valleys of the various rivers. The cross drainage flowing at about right angles to these main rivers leaves isolated ridges, peaks, and hogbacks, and the sub-drainage into this cross drainage complicates the situation so that the general aspect of the country is that of a badly eroded table-land. The ridges and the isolated hills vary in height above the various local valleys from 1,000 feet in the north to 150 to 200 feet in the central and southern sections of the table-land.

All of these ridges, hills, and valleys are intensely cultivated. The valleys are under a fine system of irrigation and the sidehills are terraced throughout the entire section, giving the country the peculiar aspect of terraced gardens. The population is very dense, and for the most part is fully occupied in the cultivation of the irrigated and terraced farms.

In the northern part of the central plateau there are thousands of salt wells, which vary from 200 to 500 feet in depth, and in the southern part of the central plateau these salt wells are over 2,000 feet in depth. Natural gas is sometimes encountered and in such cases is utilized in connection with the evaporation process in reducing the salt from the brine, which is taken out of these wells. There are also indications of paraffin base petroleum in two places, one near Chuhsien and one near Shunking. From the above general description of this red sandstone and shale basin, containing coal, salt, some natural gas, and indications of petroleum, it would lead one to believe that this immense basin may contain large deposits of petroleum awaiting future development.

THE JENHO, TEN MILES EAST OF CHENGKOU

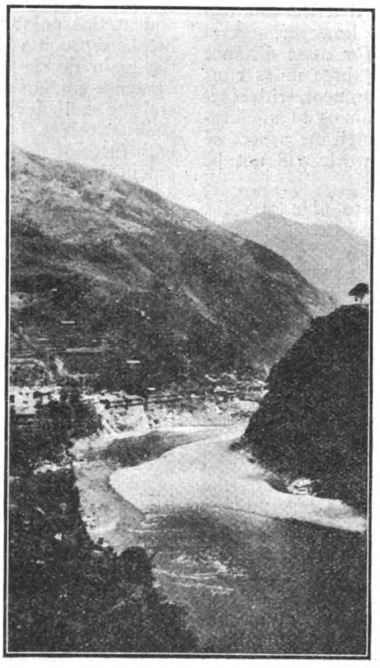
Further details regarding the mineral, agricultural, and other products of this section are given elsewhere in this issue.

This central basin is about 400 miles in length, east and west, and about 200 miles in width, north and south, and includes the best developed parts of the province of Szechwan.

Continuing the description of the line: in descending the west slope of the main divide the line will follow down the drainage of the Tungkiang. The topography, while considerably broken, lends itself readily to one per cent maximum grade.

After leaving the foot of the main divide the line follows down the northeastern branch of the Tungkiang River to the city of Tungkiang. The river had formed a narrow valley, cut deep into the shale and sandstone, leaving high ridges and hills on both sides of the stream. The side slopes of the river average about 35 degrees, thus giving light grading work, but at various points the river turns sharply, necessitating heavy cuts to obtain good alignment. There are numerous large bends in the river and an instrumental survey will show that it may be advisable to cut through these with heavy cuts or short tunnels in order to shorten the line and secure better alignment.

At mile 543 there is about one mile of box canyon where the river breaks through a ridge parallel to the main divide. It will probably be necessary to tunnel through this ridge for about one mile as there is no place to support a railroad grade amidst perpendicular cliffs. Continuing on down the river from Tungkiang, the river gradually becomes more open, the sidehills are more gentle, and the ridges back from the river become lower until the junction of the Taiping River at Sanhueichang, mile 683, is reached. From Sanhueichang to Chuhsien, mile 697, the Hou River is followed. There is no valley, but the side slopes of the bank are very gentle, varying from fifteen degrees to twenty-five degrees, thus giving light work. The materials which will be encountered along all this sidehill are shale and sandstone. The small cuts may be classified as "other material," but all large cuts will be rock, which is of a soft nature but not soft enough to be classified as soft rock. The side drainage entering the main drainage is not excessive, and can be accommodated with arched culverts. It may be found advisable to cross and recross the main river three or four times, which the line follows, in order to cut through a long bend of the river and thus shorten the line. In estimating the distance the actual river mileage was taken, consequently upon final location it may be found that the estimated distance is somewhat greater than the actual survey would indicate.

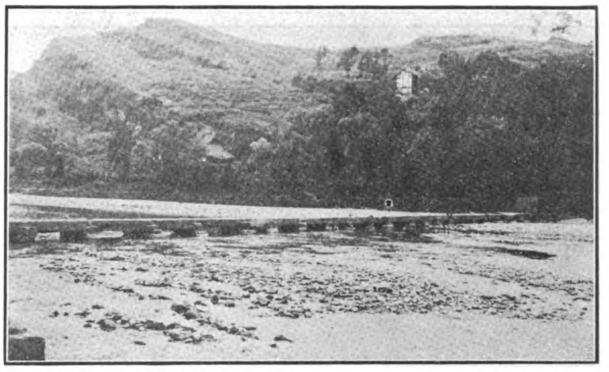


MALIPA RIVER, MILE 465

The land is all cultivated intensively, all sidehills being terraced. The general description of the central table-land will answer here for this particular section except that the ridges and hills are higher.

In general the section between mile 696 and 808 of the line runs through the center of the main red shale basin, above

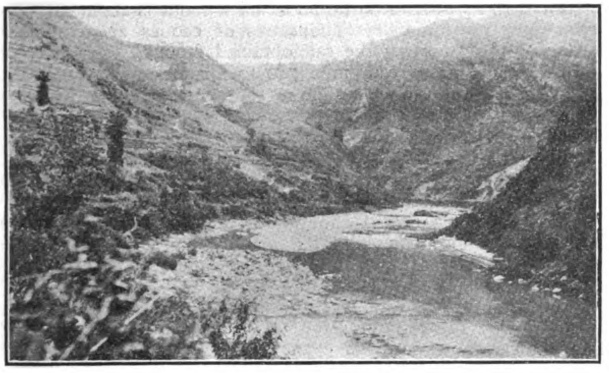
TUNGKIANG RIVER NEAR HANGKOU, MILE 540



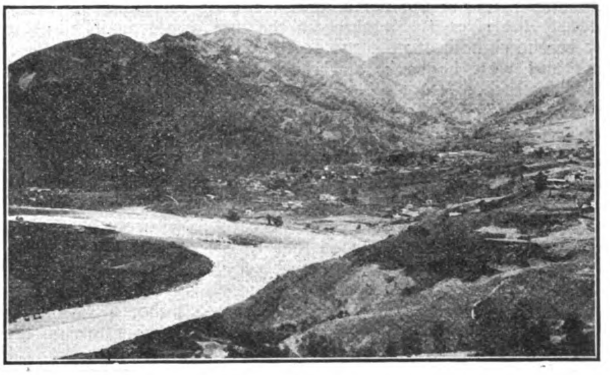
STONE BRIDGE AT CHUYUKUAN, MILE 531

LOOKING SOUTHWEST FROM YUTUPA SUMMIT, MILE 502

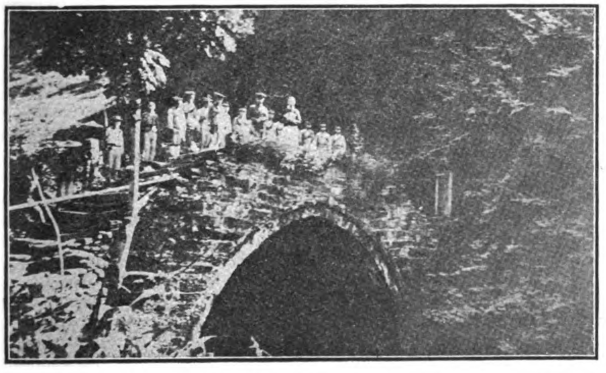
CANYON, NINETEEN MILES NORTHWEST OF CHENGKOU. NOTE CULTIVATION ON MOUNTAIN SIDES



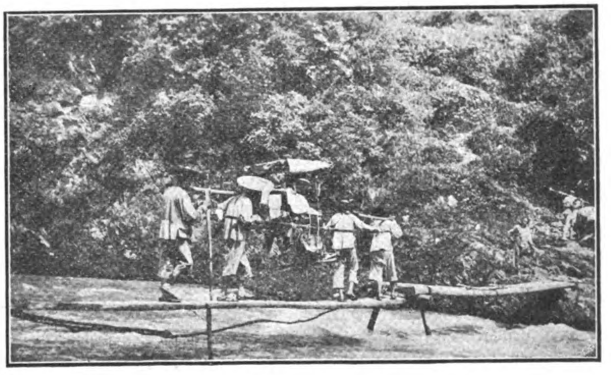
NEAR CHUYUKUAN, MILE 531



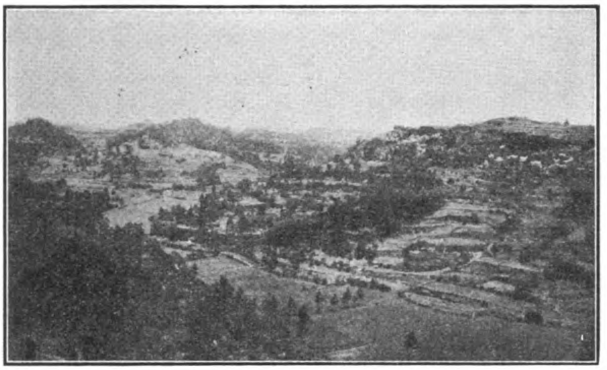
VIEW OF CHUANPING



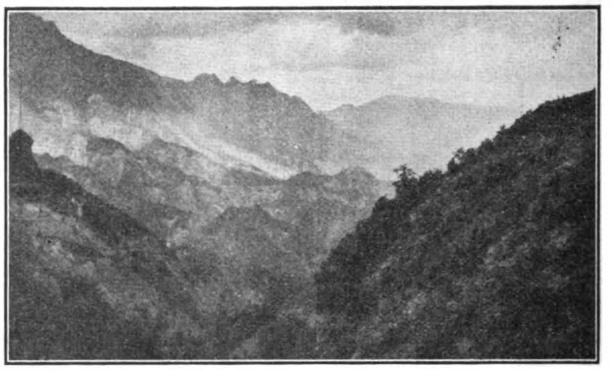
BRIDGE OVER DRAGON MOUTH SPRING, TWENTY MILES NORTHEAST OF CHENGKOU



CROSSING TZEHO, NORTH OF CHENGPING



General Character of Country Forty Miles West of Chuhsien, Mile 739



Country East of Nanchi

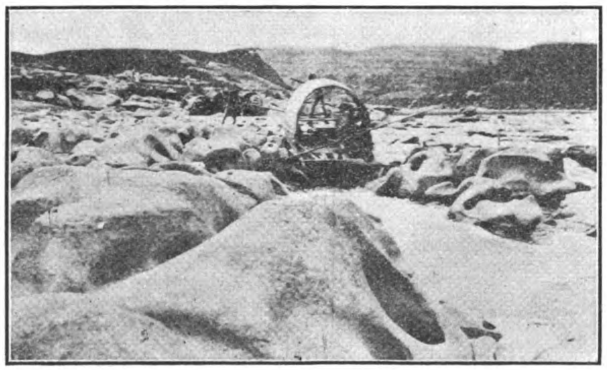
described, which is cut up badly by drainage, flowing east and west to the three main rivers. The small ridges or hogbacks, that are left by the excessive erosion are very direct east and west, with smooth sidehills, having slopes of about 25 degrees. The Chialing River cuts through the elevated table-land in a southerly direction, leaving a high ridge between this river and the Chu River, and also a lower ridge between it and the Suining River. The line crosses the main drainage at right angles, and follows the general direction of the side drainage, but would keep up on the smooth sidehills of the hogbacks extending directly east and west.

Leaving the Chu River at Chuhsien, the line would begin ascending on an 0.8 per cent grade to the main summit, mile 722, following the side slopes of the east and west ridges until near the main summit, where perhaps about two or three miles of development would be required in order to pass through a lower summit. From this summit the line will have to be supported for a considerable distance to mile 748 in the valley of Tungkuanchang; thence the line would follow a direct drainage to the main Chialingho, just to the north of the city of Shunkingfu. After passing the river at Shunkingfu, the line would again climb to the second summit at mile 778, holding the sidehills of the direct east and west hogback, and then descending to the town of Tengchi; thence following across country to Taihochen, mile 808.

There will be considerable rock work on this section on account of cutting through the various small divides but on the whole the work will not be heavy. A tunnel 3,000 feet in length may be required at the summit, mile 721, in order to maintain the 0.8 per cent grade, but it may be found that this tunnel can be considerably reduced in length or perhaps be entirely eliminated by crossing another summit farther to the south. The country west of the summit at mile 721 is very badly eroded by small deep streams, but the line can still be held on the smooth sidehills of the ridges. The crossing of the Chuho, a few miles above Chuhsien will be the largest single bridge structure on the line. This bridge will be about 3,000 feet long and about fifty feet above the normal low water. This crossing is good as compared with the general character of the banks of the river, there being a rock ridge that comes down sharply from the east to the bank of the river, exposing solid rock near river bed. On the west bank there is a conglomerate rock exposed, so without doubt the foundations for this bridge can be placed on solid rock, although this rock may be very deep below the water in the center of the river. Spans 150 feet in length were figured on in estimating the approximate cost of this bridge. Considerable heavy work will be encountered for about ten miles west of this bridge, as all the material is rock and the line will not have gained a sufficient elevation to hold the smooth sidehills of the ridges farther up.

There will be a tunnel at mile 778 about 1,000 feet in length, but this may be reduced somewhat when the actual survey is made. All this section is intensively cultivated and thickly inhabited. The terraced farms and irrigated valleys generally yield two crops of grain a year besides wheat and rice which are the staple crops. There is a large acreage of corn, sweet potatoes, peanuts, beans of numerous varieties, peas, kafir corn, millet, sugar cane, buckwheat, barley, oats, and numerous kinds of other vegetables and ground plants. Wood oil is also a valuable product of the small rocky areas which are not susceptible of cultivation. About eighty per cent of this section is under cultivation. The three rivers running south through this area are all navigable for boats up to twenty tons capacity. These rivers are the main freight thoroughfares of the country. In the interior the rate of transportation by pack coolie is about twenty-seven cents per ton mile. Thousands of coolies are employed regularly in transporting the salt obtained from the various salt wells along the road from mile 780 to mile 807. At mile 807, Taihochen, it will be necessary to cross the Suining River, a bridge about 800 feet in length being required. The river is narrower at this point than at any part within twenty miles up or down the stream. The foundation in the east bank will be rock, but about two thirds of the other foundations will probably be on piles.

Taihochen is a city of about 5,000 population. There are a few coal mines in this vicinity, but most of the coal used locally comes up the rivers from Hochow, a coal mining center to the south, situated on the southern edge of the red shale basin. Before crossing the river at Taihochen the line follows up the west bank of the Suining River in a northwesterly direction. Tungchuang, a town of about 200,000 inhabitants, is a very important collecting and distributing point for the tribal country to the northwest, and also for Tibet. Shehung, mile 817, is also an important grain center and has a population of about 50,000. Shortly after leaving Taihochen the line will follow up a short valley that enters the river from the northwest, to a small local summit where a 400-foot tunnel will probably be required. Thence the line will descend to the river again. This diversion from the river cuts off about three miles of distance over that which would be necessary if the river route were followed.



Running the Rapids on the Upper Paishuiho, Mile 630

LOOKING SOUTHWEST FROM DIVIDE TOWARD CHENGKOU

LOOKING NORTH DOWN THE TAOHO FROM SUMMIT OF SHENSI-SZECHWA BOUNDARY

After this small local diversion is passed, the line will follow the west bank of the river. The grading work will be light, as the sidehills back of the river are very direct in alignment and the slopes are gentle, averaging about twenty degrees. The side drainage is light, although a few branch streams enter the river which will require about three hundred feet of plate girder opening for each. The general character of the country is rocky but the sidehill slopes of the river are mostly talus, although all deep cuts will be in solid rock. The country back from the river is of the broken nature of the red shale basin. It is all intensively cultivated, the valleys producing two crops of grain a year and the high terraced farms one crop. The salt industry is very large, as there are thousands of wells scattered far into the interior. The large junk traffic on the river is heavy especially in the transport of salt.

Continuing west from Tungchuang the line will pass through a light rolling table-land on the north side of the Chungkiang River, which is a large branch of the Suiningho, entering from the west. This country is intensively farmed, producing two crops each year, one of rice and one of wheat. The higher ground produces only one crop per year. Hemp, indigo, corn, sweet potatoes, peanuts, sugar cane, wheat, barley, oats, silk, and tung oil are the chief products; there are also various other kinds of ground plants and vegetables. Hog raising is an extensive industry throughout the central basin generally, but there are few cattle or horses raised. Sheep and goats are raised in a very limited number. The output of hides is considerable as each farmer owns at least one water buffalo or one head of stock is used for working purposes. Thus the total accumulation of hides from used-up animals is very large on account of the density of the population.

At about mile 847 the Chungkiang River will be crossed on a 700-foot plate girder bridge, and a sub-drainage will be followed up to a point near the town of Panpunshan, where it will probably be necessary to begin supporting the 0.8 per cent grade in order to gain the table-land above; and from this table-land the support will continue up to the main summit at mile 878, where it will be necessary to use a tunnel about 8,000 feet in length in order to maintain the grade descending to Chaochiatu. From the summit at mile 777 to mile 885, Chaochiatu, there is a drop of 1,000 feet from the top of the divide to the river valley in a distance of six miles. This particular part of the line is the most difficult on which to maintain a low grade line, as at no other part is there such limited distance in which to overcome the necessary elevation.

In order to maintain the low grade line at this point it will be necessary to use the 3,000-foot tunnel above-mentioned, with a grade line approximately 400 feet below the top of the divide. The country is such that it lends itself to natural development, and about 1½ to 2 miles of extra distance can be obtained by following the sidehills of the valley and then following on down the supporting country to the river at a point just below Chaochia-fu. The grade line at the crossing will be approximately 150 feet above the river, and a 3,000-foot viaduct, 150 feet in height, will have to be used to maintain the low grade. It may be found more economical to use a short pusher grade over this divide, but the distance is so short and this section is located at such a point that it would probably be advisable to hold the low grade. This, however, is a matter which the surveys will determine. This summit can probably be eliminated altogether by going farther south, though this would increase the distance considerably. In general this section of the country is smoother and of a more rolling character than the main central basin. The grading work will be light, but, on account of the supported grade, there will be considerable rock work, but not of a heavy character. The country throughout this section is intensively cultivated and the crops are the same as before described, although the cultivation of rice is more extensive, due to the more even nature of the land.

The line from mile 884 to Chengtu passes through the eastern part of the Chengtu plain following a low, smooth, direct hogback with an elevation of about 700 feet above the general plain. This hogback is simply a slight elevation in the plain which divides the waters of the Min River from the waters of the Lu River to branches of the main Yangtze River. On account of the line following this low watershed the bridging will be very light, as will also be the grading work. The material encountered will be earth. No trouble will be experienced with water.

The Chengtu plain is about forty miles wide by eighty miles long and contains a total of approximately 4,500,00 people, or an average population of about 1,440 persons per square mile, indicating a very dense population. The plain is intensively cultivated and is well irrigated by an excellent irrigation system which is said to be the oldest irrigation system in the world that is still in use. The ditches are well laid out and water is available for the entire area. On account of the supply of water coming from the mountains, which are capped with perpetual snow, there is no scarcity of water at any time of the year or during any year. As a result of this condition the Chengtu plain is considered the most productive and surest agricultural area in all China. Two crops are raised each year, chiefly rice and wheat. There is a small acreage planted with cotton but it is a very poor crop, apparently due to the soil being unsuited to this crop. The tobacco and sugar cane industry is large. Almost every kind of grain is grown, while vegetables and oil and many varieties of beans are produced. This plain is said to produce everything agricultural that is grown in any part of the United States, and many kinds of beans, peas, ground plants, and vegetables besides, which are not as yet known to the American farmer. Too much cannot be said about the wonderful productivity of the soil of the Chengtu plain and the great variety of its products. About twenty to thirty miles west of Chengtu lie the mountain ranges of Eastern Tibet which separate China Proper from Tibet, or Si Tsang, the "Western Treasury," as it is called. These mountains are perpetually covered with snow and are very broken, rising to an average elevation of about 12,000 feet. There is one peak which can be seen from the city of Chengtu which is said to have an elevation of 28,000 feet. We are informed by reliable men living in this vicinity that these mountains contain large deposits of gold, platinum, copper, and coal.

OYAMA PIT, FUSHUN COLLIERY, MANCHURIA

Great Manchurian Coal Seam

The Fushun Collieries

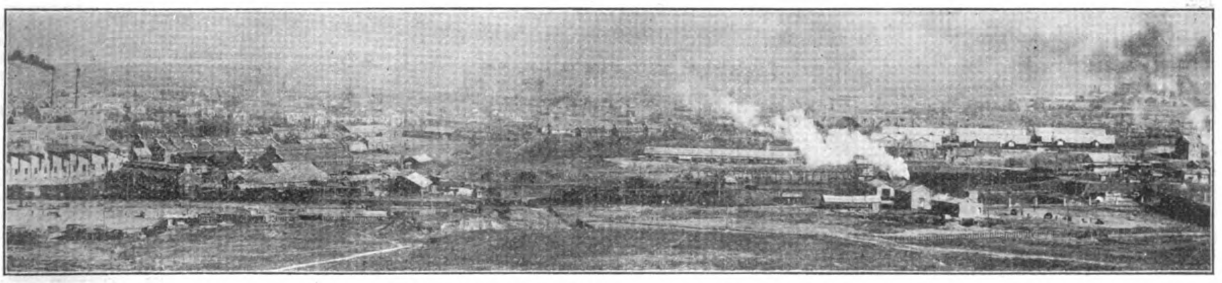
When the Chinese failed to develop the great coal seam at Fushun, twenty miles east of Mukden, Manchuria, through superstition in the first place and willful negligence in the second they allowed to pass out of their hands the richest fuel deposit in the Three Eastern Provinces. If two million tons of coal are produced from this bed each year it is estimated that the supply will last for a century or so. At least 1,000,000,000 tons are "in sight." Chinese lethargy, short-sightedness, and general don't-care-a-damnness caused the pick of the field to go first to Russian control, and thence, as a result of the Russo-Japanese War, to the Japanese Government who placed it in the enterprising hands of the South Manchuria Railway Company. This progressive concern demonstrated to the Chinese in very quick time just what the application of modern methods means. Now Fushun is on the industrial map as one of the most important coal-producing centers in Asia, especially so far as potentialities are concerned.

Even the Koreans showed greater appreciation of the hidden fuel than the Chinese. Sometime in the twelfth century Korean emigrants mined the coal to bake their pottery and provide the fire for other industries. At that time the Tartar dynasties of Liao and Kin occupied the regions and their relations with the Korean kingdom of Kao-li were intimate enough to permit the emigrants to mine and work at Fushun. The founder of the late Manchu Dynasty was, however, a believer in spirits and a disbeliever in holes in the ground. The ancestral tombs were, according to the notions of his time, menaced by the destruction of Fengshui (the "wind and water" spirits) wrought by the hewers of coal, and he promptly prohibited the working of the mines. The great coal seam was forgotten until about 1901 when the then Tartar General Tseng-chi granted concessions to two companies, one a Russo-Chinese concern and the other Chinese, to work mines in the east and the west of the field. Lack of capital soon threw the Chinese into the hands of the Russians, and the latter were carrying on work when the war with Japan compelled a change of ownership. This was in 1905. There were then three levels being worked, with a daily output of 363 tons. Chienchinchai was a small hamlet of some fifty houses. Now there are some 8,500 tons being hewed per day and the erstwhile hamlet is a thriving industrial city with a population of some 13,000 to 15,000 people. In addition to the Railway Company's Mining Office there are established three schools, hospitals, theaters, large buildings connected with the electric light and water installations, commercial houses, etc. In 1907 the site of this development was a field of kaoliang.

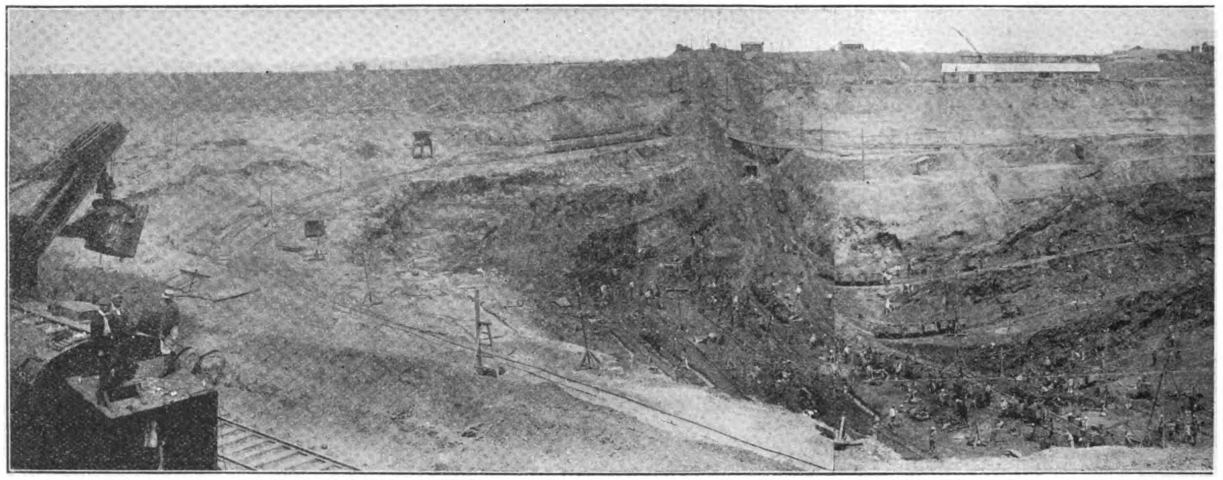
The South Manchuria Railway Company took over the mines from the Military Administrative in 1907 and made radical improvements at the three pits then working—the Chienchintsai, Yangpaipu, and Laohutai. The shafts and drives started by the military authorities were completed and new machinery was installed. The Oyama and the Togo pits were opened, and equipment of the most modern nature was installed. Coal was struck in the Oyama mine at a depth of 1,160 feet, while in the Togo pit it was reached at 863 feet.

The coal seam extends from east to west for nearly ten miles along the strike and dips toward the north with an inclination of 22° to 35°. Two coal seams are known, but only the upper one which is over 120 feet thick is being worked. The coal is noncaking with a fine luster, and of uniform quality, the following being the analysis of an average sample: Water 7.00%; volatile matter, 40.00%; fixed carbon, 48.00%; ash, 4.00%; sulphur, .80%; specific gravity 1.28; calorific power, 6,800. The coal is good for all purposes and is particularly suitable for gas-making and locomotive uses.

The coal belongs to the tertiary period and is surrounded by gneiss of old formation and by basalt rock. The coal-bearing rocks are mostly shales and clay, often with fossil leaves.



THE COLLIERY TOWN OF CHIENCHINCHAI, MANCHURIA



THE OPEN CAST COAL MINE.

The Chienchintsai, Yangpaipu, and Laohutai pits are worked at present by the pillar and stall system, the coal tubs being hauled up by electric as well as steam hauling engines, and hoisted by steam winding engines.

Pumping is done by electric turbine pumps as well as Worthington and Evans' steam pumps.

Lighting is by Davy and Clanny lamps. Ventilation is mostly natural, but one fan engine is installed at the Chenchintsai pit.

The coal is screened either manually or by simple coal screening machines connected with picking belts separating into lump and dust.

Output

The total production of coal for the last fiscal year, April 1, 1917, to March 31, 1918, was 2,275,905 tons. The average daily output was 6,236 tons. Since the beginning of 1918 the average daily output has risen to about 8,500 tons.

The employees of the company number 232 officials; 218 subordinate officials; 1,978 Japanese laborers, 1,834 Chinese laborers. A total of 4,262 finding employment directly with the mines.

Oyama Pit

The following is a brief sketch of the Oyama mine:

(a) Shafts. Down cast, 21′ in diam. brick lined 1,240′ deep. Up cast 18′ in diam. brick lined 1,240′ deep. Fan drift of up cast, 12′ wide, 15′ high, sectional area 165 sq. ft. Distance between centers of two shafts 180′. Level of pit mouth 32′ above railway. Level of coal stock yard 18′ below pit mouth.

(b) Pit head frames. Frames for both down and up cast shaft are practically the same in shape. Lattice girder type, height 75′ up to centers of pulleys. Pulleys 18′ in diam. Up cast shaft has steel plate air boxing. Both frames have steel gallows and roofings.

(c) Cages. For down cast, single deck to carry four coal tubs, with balance rope underneath cages. For up cast, single deck to carry two tubs, no balance rope used. All cages have tilting bottoms and those for up cast have side plated. Tubs, steel, length of body 4′ 0″; width of body 3′ 2″; height of body 2′ 0″; diam. of wheels on tread 12″; distance between centers of wheels 18″; cubic measure 25 cu. ft; coal contents 12 cwt.; gauge of tramway 24″; rails, weight per yard 24 lbs.

(d) Guides. Rope guides, four ropes for each cage. Sizes 4″ circum. for down and 3½″ for upcast cage.

(e) Keps. Beien's patent.

(f) Detaching hooks. Ormerod's patent.

(g) Screening plant of capacity to screen and pick in 16 hours, 3,168 tons of coal (2,304 tons from down cast, 864 tons from up cast); 3 tipplers for Marcus screens; 1 Marcus screen, 76′×4′6″; 1 Marcus screen, 62′×4′6″; 1 Marcus screen, 48′×4′6″; each fitted with 20′ of ¾″ square perforations for small coal, 12′ of 1¼″ square perforations for nut coal. Each screen treats 70 tons per hour.

Steel plates provided for covering either ¾″ or 1¼″ perforations. 3 Marcus conveyors for lump coal, each 70′×4′6″, each fitted with 2′6″ square perforations at the delivery end. 3 deflecting belt loading jibs for above, each 24′×4′6″. 1 plate belt with deflecting jibs for nut coal. 95′×4′6″. 1 elevator for bunker coal, 30′×18″. 1 creeper for upcast empty tubs 90′ long. 1 creeper for downcast empty tubs 70′ long. 5 automatic greasers for tubs. 2 tipplers for tipping stock coal. 2 Marcus conveyors each 200′ long, each to convey 32 tons of coal per hour for stock. Coal can be deposited at intervals of 6′ by opening doors. Screen house, gantries and other structures steel.

Induction motors (3 phase, 60 cycles, 220 volts) for driving screens etc., are—

4–30 H.P. and 4–20 H.P. motors for screening plant; 1–10 H.P. motor for stock coal tipplers; 2–30 H.P. motors for stock coal conveyors. Inclination of tramways 1 in 40 on an average. Maker:—Head, Wrightson & Co., England.

(h) Winding Engines. For downcast, maximum load 10 tons including cage, loaded tubs, rope, detaching hook, etc. Time of one wind, —1 min. including banking. Quantity of coal in one wind,—2 tons 8 cwt. Max. quantity of coal to be raised in 8 hours 1,152 tons. Steam pressure 160 lbs. at boilers. Cross compound Corliss engine. High pressure cylinder 25″; low pressure cylinder, 41″; stroke 54″; parallel drum 14′× 11′6″; winding rope, in circum. 5″; cylinders steam jacketed.

Fitted with steam reversing gear. Reheater receiver; Whitmore brake engine, controller and overwind preventing gear; speed governor, depth indicator; splash steel plate for drum; 12½ ton overhead traveling hand crane, by Fraser & Chalmers, Ltd., England. For up cast, maximum load 6 tons. Time of one wind, 1 min. including banking. Quantity of coal in one wind, 1 ton 4 cwt. max. quantity of coal to be raised in 8 hours 516 tons. Duplex Corliss Engine. Cylinders 18″; stroke 48″; parallel drum 10′×8′; 5 ton overhead traveling hand crane.

All other conditions and fittings are the same as the engine for down cast.

Maker:—Fraser & Chalmers, Ltd.

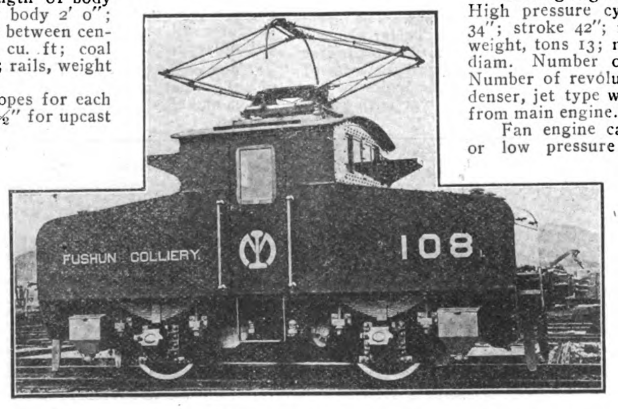
(i) Fan Engine. Capacity to exhaust 300,000 cu. ft. of air per minute with a water gauge of 6″. Walker's indestructible fan with antivibration shutter. Fan. Diam. 18′, width 7′.

Driving engine. Cross compound Corliss engine. High pressure cylinder 17″; low pressure cylinder 34″; stroke 42″; rope pulley, diam. 16′; rope pulley weight, tons 13; number of ropes 11, each 1¾″ in diam. Number of revolutions of fan 170 per min. Number of revolutions of engine 70 per min. Condenser, jet type with vertical air pump driven direct from main engine.

Fan engine can be run with either high pressure or low pressure cylinder independently. Has an arrangement to be capable of exhausting or blowing air into the mine. Maker:—Walker Brothers, England.

(j) Central power plant. Is situated close by the Oyama Pit and supplies electric power to surface and underground machinery of Oyama, Togo, Chienchintsai and other pits, central workshops and waterworks and also for lighting. Current, three phase, 60 cycles. 2,200 volts.

Generators. 2–500 K. W. and 2–1,000 K. W. C. A. Parson's Turbo-alternators with direct



TWENTY-FIVE TON ELECTRIC LOCOMOTIVE AT FUSHUN COLLIERY

FUSHUN COLLIERY, MANCHURIA

coupled exciters. All of fourpole type. Revolutions, 1,800 per min.

Each fitted with horizontal surface condenser having electric vacuum pump, circulating and lift pumps and vacuum augmenter.

Switchboard for generators, feeder panels, etc., complete. 10 ton overhead traveling hand crane provided.

Cooling pond for condensing water, 3½ acres in area and contains 120,000,000 cu. ft. of water. Water pipes between pond and power house 22″ in diam.

Boilers. 7 Babcock & Wilcox boilers each having heating surface of 4 020 sq. ft. and evaporating power of 12.300 lbs. of steam per hour.

Steam supplied also to winding and fan engines. Strokers Babcock & Wilcox chain-grate stokers driven by 2 engines each 5½″ diam. by 5″ stroke. Area of stoker 74.8 sq. ft. Velocity 7′-24′ per hour.

Superheater (integral with boilers) to superheat the steam by 100–120 F. Superheating area of one set 569 sq. ft. Number of pipes 64 each 1⅝″ in diam. 3 feed pumps, duplex Worthington having steam cyl., 10″, stroke 10″, plunger 6″. 1 Worthington hot water meter with 4″ pipe.

Green's economizers. 4 sets each consisting of 240 tubes 9′ long 4 9/16″ in diam. Heating surface 10,300 sq. ft. Scraper driving engine 5″×10″.

Chimney.—Inside diam. at top 10′; height 150′; have inside core up to 93′.

Togo Pit

The general arrangement of this pit is similar to that of Oyama, the only points of difference being as stated below:

(a) Pit head frames. Lattice Girder 100′ up to the centers of pulleys. Banking level is 28′ above the pit mouth.

(b) Fan engine. Rateau fan. Diam. 4 meters (13.2 ft.). Exhaust casing 26′ high. Capacity, to exhaust 300,000 cu. ft. of air per min. with a water gauge of 6″.

Driving Engine. Cross compound with Collmann's valve. High pressure cylinder 500 m/m=19.7″; low pressure cylinder 800 m/m=31.5″; stroke pressure cylinder, 900 m/m=35.45″; rope pulley fly wheel, 4.5 m=14.76 ft.; number of ropes 10, each 2″ in diam. Number of revolutions of fan 175 per min. Number of revolutions of engine 99 per min. Condenser jet type driven direct from main engine. Fan engine has arrangements to run either high pressure or low pressure engine independently.

(c) Boilers. 4 Babcock & Wilcox boilers each of the same capacity as that of Oyama pit with chain-grate stokers. 2 feed pumps, Weir's simplex. Steam cyl. 10½″, stroke 24″, plunger 8″. 1 Worthington hot water meter. 2 sets of Green's economizers, each consisting of 240 tubes.

The main office and stores are at Chienchintsai and consist of many brick buildings.

The machine shop, blacksmiths' shop, foundry and carpenters' shop are at Chienchintsai. Total area of these buildings is nearly one acre.

The brick factory has the capacity of turning out 20,000 bricks per day.

Waterworks.—On the bank of the Hunho River, about a mile out of Chienchintsai, a large well is sunk and the clear water collecting there through natural filtration is raised to the reservoir at the south of Oyama pit by electric pumps. Capacity is 100 cu. ft. per min.

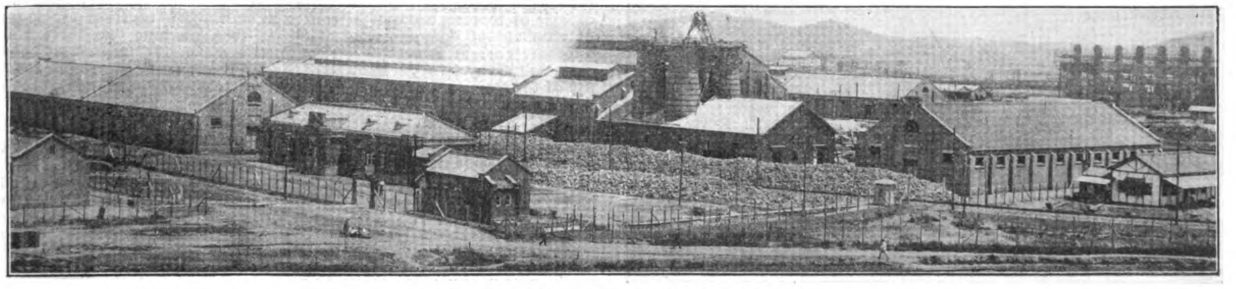
Electric light. All buildings, streets, and residences are lighted by electric lamps, current being supplied from the central power house.

Gas works. Gas is supplied to all houses for cooking use. The capacity of the works is 50,000 cu. ft. per day and can be increased up to 100,000 cu. ft. by only adding two retort furnaces.

It will be remembered that it was in the Oyama pit that a serious explosion involving the loss of over 900 lives took place the winter before last. Work has been resumed in the mine and at present some 670 tons per day are being produced. This is about half the quantity mined before the disaster. The explosion was due, according to Dr. S. Yonekura, the chief engineer and superintendent of the collieries, to an "explosion of coal dust," there being little gas in the workings. Steps have been taken to prevent a repetition by the introduction of sand and crushed stone treatment.

Sand-flushing Process

The sand-flushing system adopted after the explosion forms one of the most important auxiliary features of the collieries. Without it it would be technically impossible to tap 30 per cent of the immense coal hoard. As it is, as much as 70 per cent, at a conservative estimate, will become exploitable. The value of the extra profit accruing from the use of sand-flushing is estimated at Yen 329,000,000, at the rate of Yen 1 per ton in net profit for the coal output. The first plant for this work was installed in the Yangpaipu pit in 1912, and in 1913 a similar plant was installed in the Oyama pit. These plants were partly experimental. They proved the value of the system and in 1913 flushing shafts were sunk both at the Oyama and Togo pits, sand pockets being constructed during the next fiscal year, and the whole put in operation in 1915. In 1918 a plant was placed in the Laohutai pit. A second plant is now being put in both the Laohuti and Yangpaipu pits and a first plant has been installed in the Wantawu and Chenininchai pits. In the Oyama and Togo pits the capacity of the sand pockets is 3,200 cubic yards each, the daily quantity



ELECTRO-CHEMICAL INDUSTRY FUSHUN COLLIERY

of sand flushing underground being 4,000 cubic yards. In the Yangpaipu pit the No. 1 plant pocket holds 400 cubic yards, and the daily flushing 1,200 cubic yards. The No. 1 plant in the Laohutai pit has pockets with a capacity of 1,600 cubic yards, and a daily flushing capacity of 1,200 cubic yards. As a result of the sand flushing 1,277,247 tons of coal were mined, at the rate of 6.79 tons of coal to one cubic foot of sand, during the fiscal year 1916.

The transportation of sand is in itself a work of some magnitude, especially as the sand for use in winter months has to be gathered before freezing sets in. The sand is obtained on the Hun and Yangpaipu rivers. Two drag line excavators, six steam shovels, two small revolving shovels and one large revolving shovel are being used at the various sand beds. Three other steam shovels are in course of erection.

The aspects dominating the future working of Fushun are two, the sand flushing and the open working. By use of the former the deeper layers are tapped, and by the latter the surface seams are worked.

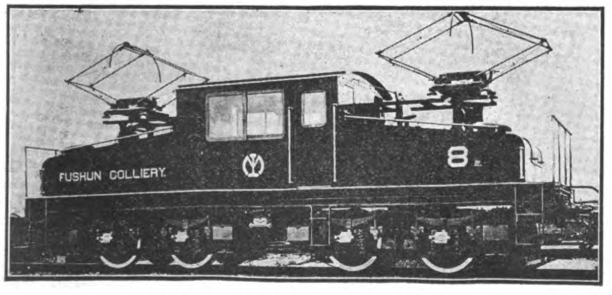
The Open Cast

The open workings are among the most impressive sights to the layman. The coal at Fushun lies in upper and nether seams. The latter remain untouched. The former are under operation.

The open working zone, part of which is shown in the illustrations of this article, is located on both sides of the railway track of the Fushun branch line. The seam ranges in thickness from 50 to 200 feet. The area laid out for open working calls for the excavation of earth and sand, shale, 6,000,000 tons of coal, 1,600,000 tons of raw coal, and coal shale; in all some 2,600,000 cubic feet. Raw coal is used at the water gas producer factory, and the earth and sand are used in the sand-flushing process. The sandy strata covering the coal is some 40 feet thick.

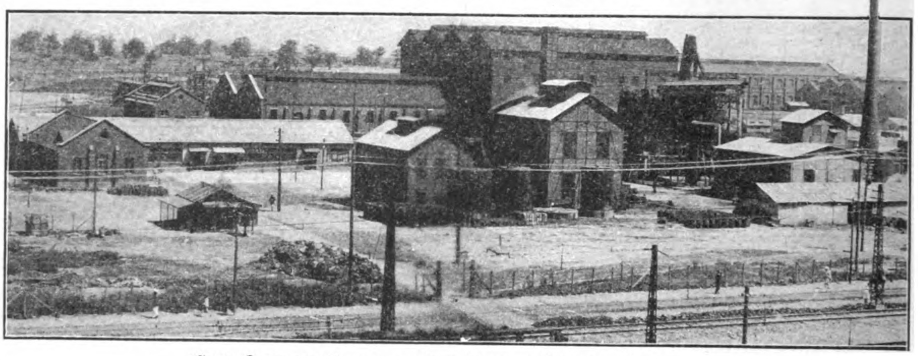
Open working was decided upon, after exhaustive prospecting, in March, 1914, and stripping work was commenced in April. In 52 days the coal seam was reached, and coal was produced in January, 1915. The coal won by July 31 amounted to 367,418 tons, and the raw coal, 153,504 tons. Tiers of steps are constructed all round the open cut, each bench being twelve feet high. There are at present twelve benches, and the lowest depth reached in this form of mining is 184 feet. About 200 lbs. of black powder are used daily in blasting. Holes are dug either with boring machines or crowbars. After the blast is fired the disturbed material is broken up with pick-axes. The material is taken out of the cut in 150 coal tubs and four locomotives of the prairie switcher type hauled up an incline by wire cable. There are two winding engines of 100 H.P., and one of 300 H.P.

Mining operations are being gradually extended downward and southward. The staff engaged in these operations consists of 11 officials, 85 Japanese, 131 Chinese, 525 regular coolies and 1,520 coolies temporarily hired. The natural flow of water from the sand is 120 cubic feet per second, and from the coal 30 cubic feet per second. This is dealt with by three electrical centrifugal pumps capable of lifting 300 cubic feet of water per minute, two 50 cubic feet pumps, and three 5 cubic feet pumps.

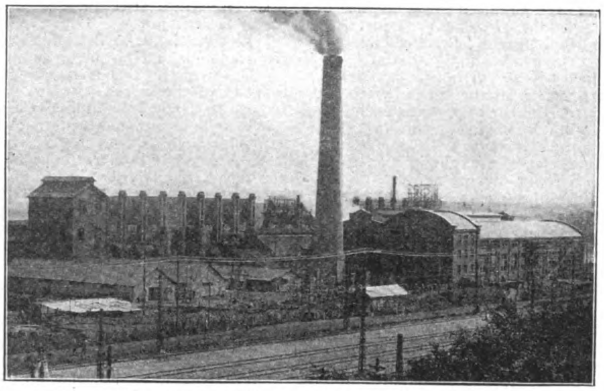


FIFTY TON ELECTRIC LOCOMOTIVE AT FUSHUN COLLIERY

The earth is excavated by two revolving shovels each with a dipper capacity of 2½ cu. yds. of sand, revolving twice per minute, in addition to 2½ cu. yd. steam shovels revolving 2½ times per minute and one five-eighths cu. yd. steam shovel. The present daily output is 900 tons good coal, 300 tons raw coal, 350 cubic tsubo of earth and sand, in addition to 100 cu. ft. of water pumped.



COKE OVEN AND SULPHURIC ACID FACTORY, FUSHUN, MANCHURIA



GAS PRODUCER FACTORY, FUSHUN COLLIERY

Company Administration

In order to secure greater efficiency in the working of the company's properties reorganization was recently effected to place the collieries, the Anshan Steel Works, the coal sales section, the mining section, and the geological institute, under one head. They have therefore been placed under Mr. S. Kabayama, Director of the Mining Department, who also has the direction of the Mond gas producer factory, the sulphate of ammonia factory, and the coke ovens, etc.

Mond Gas Producer Plant

To utilize the great quantity of unmarketable coal present at the mines it was decided to install a Mond gas producer plant and make gas and recover ammonia at the same time. Power is thus developed, and, at the same time by-products, the power being used for mining operations, illumination, and electrochemical purposes. The sulphate of ammonia is utilized largely in Japan for rice, wheat, barley, mulberry, and other fertilization purposes, and in the South Sea Islands on the sugar plantations. The tar produced is used in many ways, as pitch and tar oil, and a special disinfectant named neo-creoline is manufactured.

Ten gas producers have been installed and these produce gas which is used in a Babcock and Wilcox tubular boiler for the operation of a steam turbine in electrical generation by means of a Curtiss turbo-alternator.

No. 1 Power Station is equipped with ten boilers, with a heating area of 4,020 square feet, fitted with chain grate stokers and economizers; five three phase alternating current generators; two Pearson's steam turbines, direct couple 2,200 volt, 60 cycle, 500 kilowatts; one similar plant 1,000 kilowatts, and two 1,500 kilowatts each. No. 2 Power Station contains eight Babcock and Wilcox boilers with a heating area of 4,020 square feet, equipped with gas burners, one having a tar burner so that either gas or tar may be used; ten gas generators with byproduct recovery appliances capable of treating 240 tons of coal in 24 hours, yielding from 9 to 10 tons of sulphate of ammonia and about 12 tons of tar; two three phase alternate current generators; two Curtiss steam turbines direct couple 2,200 volt, 60 cycle, 1,500 kilowatts; three direct current generators for the use of the tramway service, 2,200 volt, 750 horsepower synchronous motor direct couple, 1,200 volt, 400 kilowatts.

Proposed additions to this plant are estimated to increase the power by 9,000 kilowatts, giving the collieries some 16,500 kilowatts per hour. At the same time the output of ammonia will be raised to 30 tons per day.

Electricity for motor power can be supplied at Fushun at a cost of half a sen for 1 kw. per hour. At other places on the S. M. R. line 1 kw. costs 25 sen, and at Tokyo from 2 to 3 sen.

Sulphuric Acid Factory

The company also maintains a sulphuric acid factory. Two sets of machinery are installed capable of producing 25 tons of Chamber acid, and this plant is to be doubled.

Coke Oven Plant

The coke ovens were opened for work in April, 1914, to supply coke for the manufacture of carbide by the Electro-Chemical Industry Co. The plant is equipped with five vertical coke ovens of the Elliott Jones type, with a total charging capacity of 50 tons of coal, and a production of 32.5 tons of coke per day; one ammonia absorber capable of producing three quarters of a ton of sulphate of ammonia per day; one tar distillator capable of holding ten tons. About twelve horizontal ovens of the Kopper's system are in course of installation.

For the completion of the extension plans for the Mond gas power station, the sulphuric acid factory and the coke ovens the sum of about Yen 5,000,000 is required.

At present the total quantity of coal used is 1,000 about tons daily, of which 750 tons are for the gas power station.

The Electro-Chemical Industry

The electro-chemical works at Fushun has so far been engaged in the manufacture of cyanamide and of sulphate of ammonia from cyanamide. Limestone is found in abundance at Hualienchai, on the Mukden-Antung Railway, whence it is transported to the kilns at the mines, and is there treated. About eleven tons of sulphate of ammonia are produced daily, though the original plan was to produce fifty tons per day. This development was prevented owing to delays in the delivery of plant to extend the water gas producer installation. The supply of power by the gas producer plant is limited and only three sets of electrical furnaces are now in use. In due course five more will be set up. Before the war sulphate of ammonia was quoted in Japan at Yen 120 and Yen 130 per ton, but that price has been trebled on account of the war. The product of the Fushun works is purchased at the kilns by public tender, and is shipped to Japan for fertilizer purposes.

Zinc Refining

The war has also developed zinc refining at Fushun and by next August it is expected to have a plant running.

Another Link Between Korean and Chinese Railways

A Line from Kirin to Hweining to Be Built

On June 18 a preliminary agreement was signed between the Chinese Ministry of Communications and a group of three Japanese Banks (the Hsin Yeh Bank, the Bank of Chosen, and the Bank of Formosa), represented by the Hsin Yeh Bank, for the construction of the projected railway between Kirin and Hweining on the Korean frontier.

The terms of the contract are reported to be as follow:

(1) Amount of the loan, $20,000,000.

(2) Use, for construction of the Kirin-Hweining railway.

(3) The loan to be floated in the form of public bonds which are to be issued through the Bank of Chosen, the Bank of Formosa, and the Hsin Yeh Bank.

(4) Interest to be 5% per annum.

(5) Security, the property and income of the projected railway.

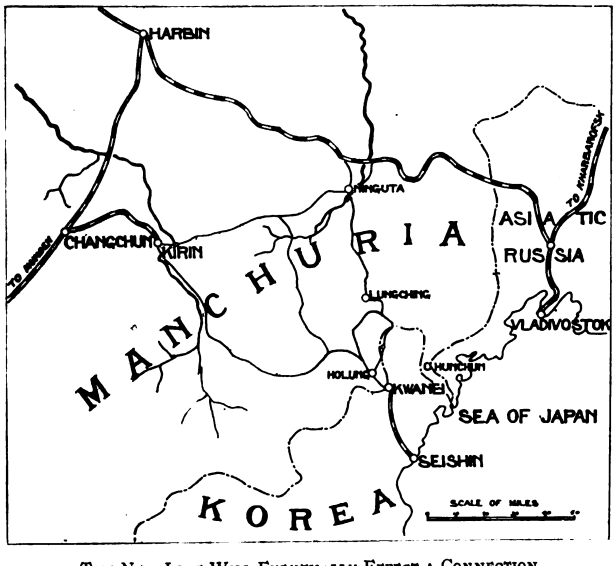
(6) Time limit for repayment, forty years.

(7) Funds required for the erection of a steel bridge over the Tumen River to connect the proposed line with the Korean railway system to be equally subscribed by the Chinese and the Japanese Government.

A most important point—the rate of discount—has not been made public.

An advance of $10,000,000 was paid after the signing of the preliminary agreement. Negotiations with regard to the final construction contract will shortly be commenced.

This railway is the logical development of the recent opening of the light line from Seishin, on the Korean seacoast, and the Korean side of the Tumen River at Hweining, and its possibility was referred to in the February issue of the REVIEW. When built it will have a decided effect in commercially developing the section of Manchuria through which it will pass. Hitherto freight from the vicinity of Kirin had to be hauled by rail all the way to Dalny or to Fusan. The projected line will take it a short cut direct to the sea, and this simple connection is destined to have an important effect on the whole situation in northern Manchuria in the future—probably in more ways than one. A glance at the sketch which we reprint from the February issue will show the connection, and will inspire thought, when the politics, international and otherwise, which are interwoven with the affairs of this territory are remembered.



THE NEW LINE WILL EVENTUALLY EFFECT A CONNECTION BETWEEN KIRIN AND KWANEI

The construction of the projected railway by Japanese interests was arranged in the agreement signed between China and Japan at Peking on September 4, 1909, to settle the questions regarding the China-Korean boundary. Article 6 of that document states:

> The Government of China shall undertake to extend the Kirin-Changchun Railway to the southern boundary of Yenchai, and to connect it at Hoiryong with a Korean railway, and such extension shall be effected upon the same terms as the Kirin-Changchun Railway. The date of commencing the work of the proposed extension will be determined by the Government of China considering the actual requirements of the situation and upon consultation with the Government of Japan.

Since this treaty was written a change has been made in the management of the Kirin-Changchun Railway. It was then managed by the Chinese. On October 12, 1917, an agreement was entered into between the Chinese Government and the Yokohama Specie Bank for a loan of Yen 6,500,000, with the Kirin-Changchun Railway as security. This agreement placed the administration of the railway in the hands of the South Manchuria Railway Company, which organization is to receive two per cent of the net profits for its services. The new line when constructed will be managed by the South Manchuria Railway Company, which already operates the Korean lines. The whole railway system involved will then be under the control of one management and will benefit accordingly.

Chinese Railway Reports

Peking-Mukden Line in 1917

The general report of the Managing Director (Mr. Chu Kin-how) and the Assistant Director (Mr. Cheng Hung-lien) just issued states: The year 1917 has given us the largest earnings and net earnings ever recorded on this line and indicate that with a judicious increase to the present facilities and rolling stock much expansion may yet be anticipated in the earning power of the railway.

The difficulties under which much of the general business of the country was done during the year 1916, as shown in the report for that year, still continued to hamper trade during the year under review. The Moratorium has not yet been withdrawn. Shortage of ocean going steamer tonnage is still keenly felt while silver exchange soared to the highest level reached for 39 years. Tientsin and district suffered severely from floods in the autumn. To meet the requirements of the Ministry of War for military transportation, several hundreds of our cars were taken and employed on other lines for long periods and in consequence, especially in the autumn, we suffered an acute car shortage. But for this latter handicap the results of this year's working would have been much greater than those actually realized.

Compared with the previous year, the results obtained were as follow:

	1916	1917	Difference
Total Operating Revenue	$14,809,724.11	$16,996,642.09	+ $2,186,917.98
Total Operating Expenses	5,953,575.85	6,529,967.69	+ 576,391.84
Balance, Net Revenue	8,856,148.26	10,466,674.40	+ 1,610,526.14
Ratio of Operating Expenses to Revenue	40.32 %	38.42 %	— 1.9 %

Mileage.—There has been no increase in main line mileage, which stands at 526.139 miles.

A new branch line of 6.046 miles has been opened to Peitaiho beach increasing the branch line mileage to 79.595 miles.

This branch is only operated during the summer season.

Exchange.—The remarkable rise in the price of silver has permitted us to make the monthly remittances to London to meet the loan service at an average rate of 4/0⅛ per Tientsin Tael, a rate which means a very large saving over previous years.

Loans.—The loan service has been promptly met.

Coal Traffic.—The coal traffic from Tangshan and district is rapidly expanding and for 1917 reached the large total of 2,822,915 tons.

It has been realized, for some years past that, in order to cope with this increasing business, the railway facilities would also require to be enlarged. Much has already been done towards this end, since the commencement of the European War, and in spite of the great difficulty in obtaining the requisite material. The expenditures of the railway, since the autumn of 1914, on improvements calculated to facilitate the expenditious handling of this coal business have been as follow:

Diversion of main line from Peitaiho to Chinwangtao	$1,026,000
Reconstruction of Kuyeh station yard	72,000
Reconstruction of Kaiping station yard	61,000
30% cost of relaying Kuyeh to Peitaiho section with 80 lb. rails	368,000
30% cost of relaying Chinwangtao to Shanhaikwan section with 80 lb. rails	32,000
Pei-chia-tien, cost of new crossing station	16,000
Improvements to various station yards and crossing stations	41,000
Strengthening bridge near Tongshan	6,000
Share of cost of new rolling stock	385,000
	$2,007,000

It will thus be seen what substantial encouragement the railway administration has already given toward the development of this important industry. In addition a considerable increase in motive power has been contracted for to be delivered early in 1919.

Staff.—The Directors take this opportunity to thank the staff for their loyal support throughout a very busy season.

Operating Revenues

Percentage on Total Operating Revenues	Year Ending December 31, 1916.	Operating Revenues	Year Ending December 31, 1917.	Percentage on Total Operating Revenues
	$14,544,446.09	TRANSPORTATION REVENUE	$16,746,745.18	
42.09	$6,215,460.50	Passenger Service—Passengers	$6,816,388.02	40 18
3.03	447,959.64	Passenger Service—Other	437,493.08	2.58
51.95	7,670,444.88	Goods Service—Goods	9,299,285 18	54.82
1.41	208,653.02	Goods Service—Other	191,945.10	1.13
.01	1,928.05	Ferry Service	1,633 80	.01
	215,399.15	OTHER OPERATING REVENUES	209,461.49	
.05	6,909.75	Telegraph	19,565.27	.12
.01	1,453.41	Profits of Central Mechanical Works	5,744.98	.03
.96	140,610.39	Rents	141,534.74	.84
.45	66,425.61	Incidental Revenues	42,616.50	.25
.04	4,648.26	AUXILIARY OPERATIONS	6,963.52	.04
	45,230.60	INTERCHANGE OF ROLLING STOCK	33,471.90	
100.	14,809,724.11	TOTAL OPERATING REVENUES	16,996,642.09	100
	$14,809,724.11	TOTAL	$16,996,642.09	

Operating Expenses

Percentage on Total Operating Expenses	Percentage on Total Operating Revenues	Year Ending December 31, 1916.	Operating Expenses	Year Ending December 31, 1917.	Percentage on Total Operating Revenues	Percentage on Total Operating Expenses
		$1,028,734.59	GENERAL EXPENSES	$1,257,204.39		
3.31	8.22	$489,685.88	Administration	$494,462.64	7.57	2.91
3.04	9.06	539,048.71	Special	762,741.75	11.68	4.49
5.23	13.	773,826.65	TRAFFIC EXPENSES	820,558.36	12 57	4 83
		1,571,727.42	RUNNING EXPENSES	1,630,666.29		
8.78	21.78	1,296,918.58	Locomotive	1,351,286.37	20.69	7.95
.53	1.34	79,699.16	Carriage & Wagon	87,940.06	1.35	.52
		—	Motor Vehicles	—		
1.20	2.99	178,489.44	Traffic	177,116.74	2.71	1.04
.11	.28	16,620.24	Flotilla	14,323.12	.22	.08
		1,299 364.22	MAINTENANCE OF EQUIPMENT	1,357,587.77		
8.78	21 79	1,297,148.24	Locomotive Department	1,356,351.21	20.77	7.98
.01	.04	2,215.98	Flotilla Department	1,236.56	.02	.01
		1,279,922.97	MAINTENANCE OF WAY & STRUCTURES	1,463,950.88		
7.82	19.23	1,144,637.81	Engineering Department	1,347,675.36	20.64	7.93
.91	2.27	135,285.16	Other Departments	116,275.52	1.78	.68
40.32	100.	5,953,575.85	TOTAL OPERATING EXPENSES	6,529,967.69	100.	38.42
		8,856,148.26	BALANCE NET REVENUE	10,466,674.40		
		$14,809,724.11	TOTAL	$16,996,642.09		

Other Operating Revenues

Percentage	Previous year		Current year	Percentage
			$	
.05	6,909.75	TELEGRAPH	19,565.27	.12
.01	1,453.41	PROFIT OF CENTRAL MECHANICAL WORKS:	5,744.98	.03
.96	140,610.39	RENTS	141,534.74	.84

.45	66,425.61	Incidental Revenue ...	42,616.50		.25
1,500.00		1.—Advertising		2,274.00	
20,809.68		2.—Station and train privileges		18,838.49	
8.50		3.—Sales of unclaimed and confiscated goods		278.26	
8,652.11		4.—Profits on stores transactions		12,564.30	
35,455.32		5.—Miscellaneous... ...	35,455.32	8,661.45	
	215,399.16	Total ...	$ 209,461.49		

Auxiliary Operations

		Balances of Accounts as Under:			
.04	4,648.26	Wharves...		6,963.52	.04
	4,648.26	Total... ... $		6,963.52	

General Balance Sheet

Assets or Debit Balances

Balance at Beginning of Year $	Heads of Classification	Balance at Close of Year $	Increase	Decrease
	Investment Assets			
59,942,843.50	Cost of Road and Equipment	60,615,140.60	672,297.10	
467,730.61	Cost of other physical property	467,730.61		
57,002.80	Cost of non-physical assets	57,002.80		
60,467,576.91	Total Investment Assets	61,139,874.01		
	Working Assets			
3,930,185.79	Cash	7,256,865.35	3,326,679.56	
	Silver dollars and subsidiary coins $56,853.00			
	Notes, Bank of Communications, Peking $620,693.00			
	Notes, Bank of China, Peking ... $3,839,293.00			
	Bank Accounts, London $221,471.44			
	Bank Accounts, Local ... $872,840.62			
	Deposit Receipts to secure loan services $1,645,714.29			
		$7,256,865.35		
	Traffic balances receivable ... ... Government Railways			
1,010,850.32	Home Line	.732,678.77		278,171.55
	Other accounts receivable			
4,688.18	Other Railways ...			4,688.18
285,091.66	Sundry Debtors ...	607,160.32	322,068.66	
4,431,575.69	Stores	5,024,354.77	592,779.08	
9,662,391.64	Total Working Assets	13,621,059.21		
	Deferred Debit Items			
1,558,251.45	Temporary Advances to Government ...			1,558,251.45
	Payments Made in Advance	3,450.34	3,450.34	
2,125,200.00	Unextinguished Discounts on Funded Debt	2,049,300.00		75,900.00
23,897.90	Miscellaneous Deferred Debits ...	23,897.90		
3,707,349.35	Total Deferred Debits	2,076,648.24		
$73,837,317.90	Grand Total ...	$ 76,837,581.46		

Tientsin, March 23, 1918.

Liabilities or Credit Balances

		Capital Liabilities			
26,142.85	Shares		26,142.85		
23,903,392.57	Permanent Government Investments...		23,903,392.57		
19,550,473.86	Mortgage Bonds ...		18,839,523.83		710,950.03
43,480,009.28	Total Capital Liabilities		42,769,059.25		
	Working Liabilities				
549,733.74	Loan				549,733.74
	Traffic Balances Payable:				
	Government Railways				
35,474.68	Private Companies ...	8,505.13			26,969.55
207,006.82	Matured Liabilities Unpaid	221,052.95		14,946.13	
	Other Accounts Payable				
	Other Railways ...				
190,738.68	Sundry Creditors ...	260,452.31		69,713.63	
982,953.92	Total Working Liabilities	490,910.39			
	Deferred Credit Items				
1,691,415.47	Temporary Advances from Government	891,415.47			800,000.00
6,731,480.43	Depreciation Reserve	6,873,265.44		141,785.01	
131.96	Miscellaneous Deferred Credits ...	25,023.10		24,891.14	
8,423,027.86	Total Deferred Credits	7,789,704.01			
	Balance Accumulated Surplus				
11,166,657.28	Additions to Property Through Surplus ...	11,838,954.38		672,297.10	
9,784,669.56	Funded Debt Retired Through Surplus ...	10,495,621.94		710,952.38	
	Free Surplus	3,453,331.49		3,453,331.49	
20,951,326.84	Total Accumulated Surplus	25,787,907.81			
$73,837,317.90	Grand Total	$ 76,837,581.46			

Wm. Henderson, C. A.
Chief Accountant

Peking-Suiyuan Railway

The Managing Director (Mr. W. S. Y. Tinge) and the Associate Managing Director (Mr. J. C. Ho) have issued the report of the operations of the Peking-Suiyuan Railway for 1916. The total length of this line is 603.613 kilometers, 428.752 kilometers being main line, 40.417 being branch lines, and 134.444 being industrial track and sidings.

Returns for 1917

The Peking-Suiyuan Railway was open to traffic in the year 1916 up to Fengchen, and at the same time the Round City Branch was also open to traffic. The construction of a branch line at Tatunghsien for the transportation of coal is now in progress. While the length of this line is being extended the operating revenue is automatically increasing.

The following table shows the increasing prosperity of the Railway:

Year	Operating Revenues	Cost of Road & Equipment	Line Operated in Chinese Li
1912	$2,591,710	$17,064,297	589
1913	3,281,488	19,018,399	642
1914	3,490,778	22,335,737	642
1915	3,613,493	25,557,600	746
1916	3,895,779	25,981,204	855
1917	3,716,155	26,334,987	855

Revenue decreased in 1917 owing to floods and troubles. In spite of the cessation of traffic caused by the measures taken for the prevention of plague during 1918, when the revenues were affected, the total amount of revenue derived up to April, when compared with the corresponding periods of the previous year, shows an increase by $192,907.00.

Year	January	February	March	April	Total
1917	$266,750	$298,473	$346,301	$300,076	$1,211,600
1918	182,276	266,527	509,010	446,694	1,404,507

Report of Operations for 1916

The Peking-Kalgan Line has long been open to traffic and the Changsui Line, though constructed as far as Fengchen, was

(when the Directors took office) still in the construction period. In January, 1916, the Changsui Line was, in accordance with an order from the Ministry, amalgamated with the Peking-Kalgan Line, under the name of the Peking-Suiyuan Line, the revenues derived from the section between Kalgan and Fengchen being consequently credited to the revenue accounts.

The comparative figures given for the previous year, were obtained by adding the figures of Peking-Kalgan and Changsui lines together. The results of operation during 1916 compared with those in the corresponding period of the previous year showed the Operating Revenue in 1916 to be $3,895,779.37, and, in 1915, $3,574,364.64; the Operating Expenses in 1916 were $2,317,138.37, and in 1915, $1,917,373.88; the Net Revenue in 1916 was $1,578,641.00, and in 1915, $1,656,990.76. The ratio of Operating Expenses to Revenue was, in 1916, 59.48%, and, in 1915, 53.64%.

The Operating ratio in 1916 increased by 5.84% as compared with the previous year. The reasons are twofold:

(*a*) Before the consolidation of the Peking-Kalgan and Changsui lines, the "General Expenses" were distributed over both operating and construction accounts, while after the consolidation, the "General Expenses" were wholly allocated to operating account, as the construction account had been closed.

(*b*) In August, 1916, the section between Tatung and Fengchen and the Round City Branch Line were handed over to the Maintenance of Way Department, and the maintenance expenses were consequently increased.

The Main and Branch lines open to traffic measure 855.149 li.

Short Term Loans. The redemption of the second short term loan fell due in this year. The total amount to be redeemed including interest was $1,597,771.54. Subscription for the Third Short Term Loan was closed in March amounting to $1,421,150.00. One fourth of the amount of the loan was drawn for redemption respectively in September and December, the total amount to be redeemed for the two periods including interest being $718,061.30.

Assets or Debit Balances

Balance at beginning of year	Heads of Classification	Balance at close of year	Increase	Decrease
	B-5. Investment Assets			
	B-5-1. Cost of Road			
$25,557,600.82	and Equipment	$25,981,204.68	$423,603.86	
	B-5-2. Cost of Other Physical Property			
	B-5-3. Cost of Non-			
92,162.04	Physical Assets	119,177.04	27,015.00	
	Total Investment			
25,649,762.86	Assets	26,100,381.72	450,618.86	
	B-6. Working Assets			
76,256.33	B-6-1. Cash	427,411.95	351,155.62	
	B-6-2. Loans and Bills of Exchange			
	B-6-3. Traffic Balances Receivable			
	B-6-3-1. Government			
5,695.27	Railway	21,933.49	16,238.22	
	B-6-3-2. Private Com-			
35.92	panies	544.50	508.58	
311,594.40	B-6-3-3. Home Line	386,262.34	74,667.94	
	B-6-4. Other Accounts Receivable			
	B-6-4-1. Other Rail-			
821,431.82	ways			$821,431.82
	B 6-4-2. Sundry Debt-			
24,594.11	ors	8,825.23		15,768.88
1,268,824.40	B-6-5. Stores	1,296,922.01	28,097.61	
	Total Working			
2,508,432.25	Assets	2,141,899.52		366,532.73
	B-7. Deferred Debit Items			
	B-7-1. Temporary Advances to Government	233,307.99	233,307.99	
	B-7-2. Payments Made			
47,133.83	in Advance	55,874.18	8,740.35	
	B-7-3. Unextinguished Discounts on Funded Debt			
	B-7-4. Abandoned Property not Charged off			
609,130.44	B-7-5. Special Funds	160,000.00		449,130.44
	B-7-6. Miscellaneous			
780,814.81	Deferred Debits	1,341,755.87	560,941.06	
	Total Deferred			
1,437,079.08	Debits	1,790,938.04	353,858.96	
	B-8. Balance or Accumulated Deficit			
29,595,274.19	Grand Total	$30,033,219.28		

Liabilities or Credit Balances

Balance at Beginning of Year	Heads of Classification	Balance at Close of Year	Increase	Decrease
	B-1. Capital Liabilities			
——	B-1-1. Shares	——		
——	B-1-2. Premium on Shares	——		
	B-1-3. Permanent Government Investments	$22,662,737.06	$ 993.070.34	
$21,669,666.72				
——	B-1-4. Mortgage Bonds	——		
	B-1-5. Other secured			
1,892,570.00	indebtedness	——		1,892,570.00
	Total Capital			
23,562,236.72	Liabilities	22,662,737.06		899,499.66
	B-2. Working Liabilities			
	B-2-1. Loans and			
——	Bills of Exchange	1,444,718.60	1,444,718.60	
	B-2-2. Traffic balances payable:			
	B-2-2-1. Government Railways	44,788.29	39,648.44	
5,139.85				
	B-2-2-2. Private			
12.98	Companies	13.92	.94	
	B-2-3. Matured liabilities unpaid	122,467.66	122,467.66	
——				
	B-2-4. Other Accounts Payable			
	B-2-4-1. Other Rail-			
823,016.25	ways	——		823,016.25
	B-2-4-2. Sundry			
847,312.34	Creditors	625,233.58		222,078.76
	Total Working			
1,675,481.42	Liabilities	2,237,222.05	561,740.63	
	B-3. Deferred Credit Items			
	B-3-1. Temporary Advances from Government	——		
——				
——	B-3-2. Operating Reserves	——		
	B-3-3. Depreciation			
908,077.33	Reserves	1,146,517.99	238,440.66	
	B-3-4. Liability on account of Provident			
——	Funds	——		
	B-3-5. Miscellaneous			
13,246.48	deferred credits	44,877.92	31,631.44	
	Total Deferred			
921,323.81	Credits	1,191,395.91	270,072.10	
	B-4. Balance, Accumulated Surplus			
	B-4-1. Additions to property through			
1,998,454.72	Surplus	2,422,062 86	423,608.14	
	B-4-2. Funded debt retired through			
——	Surplus	1,519,801.40	1,519,801.40	
——	B-4-3. Fund Reserves	——		1,437,777.52
1,437,777.52	B-4-4. Free Surplus	——		
	Total Accumulated			
3,436,232.24	Surplus	3,941,864 26	505.632.02	
29,595,274.19	Grand Total ...	$30,033,219.28		

Revenue Account

Operating Expenses for 1916			Percentage on Total Operating Expenses	Percentage on Operating Revenues
E-1. General Expenses		468,010.79	20.44	12.01
Administration	222,576.83			
Special	245,433.96			
E-2. Traffic Expenses		268,472.60	11.72	6.89
E-3. Running Expenses		450,193.01	19.66	11.56
Locomotive	381,517.61			
Carriage & Wagon	33,832 14			
Motor Vehicles	——			
Traffic	34,843.26			
Flotilla	——			

E-4. Maintenance of Equipment		502,685.50	21.95	12.90
Locomotive Department	502,685.50			
Flotilla Department	—			
E-5. Maintenance of Way & Structures		600,560.32	26.23	15.42
Engineering Department	576,856.21			
Other Departments	23,704.11			
Total $		2,289,922.22	100.00	58.78
E-6. Interchange of Rolling stock		27,216.15		.70
Total Operating Expenses		2,317,138.37		59.48
Balance, Net Revenue		1,578,641.00		40.52
Total $		3,895,779 37		100.00

	Operating Revenues for 1916		Percentage on Total Operating Revenues
I. Transportation Revenue		3,778,758.81	97.00
R-1. Passenger Service—Passengers	953,328.15		
R-2. Passenger Service—Other	53,479.65		
R-3. Goods Service—Goods	2,644,126.63		
R-4. Goods Service—Other	127,824.38		
R-5. Ferry Service	—		
II. Other Operating Revenues		117,020.56	3.00
R-6. Telegraph	926.69		
R-7. Profits of Central Mechanical Works	66.05		
R-8. Rents	77,907.64		
R-9. Incidental Revenues	38,120.18		
III. R-10. Auxiliary Operations	—	—	—
Sub-Total $		3,895,779.37	100.00
IV. R-11. Interchange of Rolling stock	—	—	—
Total Operating Revenues		3,895,779.37	100.00
Balance, Net Loss	—	—	—
Total $...		3,895,779.37	100.00

Revision of Railway Fares and Rates in Japan

When estimating the Working Expenses in the Budget of the Imperial Government Railways for the seventh fiscal year of Taisho, the increase of wages and the rise in prices were taken into consideration, but since that times wages and prices have risen much higher than anticipated, and above all coal and iron have prominently advanced in price, the former being about three times, and the latter about four or five times higher in price than before the war. The average increase in price of certain important railway materials is about two and one half times the previous price. Such being the case, a deficit of about 30% in the estimates for the working expenses of this year is unavoidable, and in order to meet this apprehended deficit, the Imperial Government Railways have decided to carry out the revisions of fares and rates as shown hereunder:

(A) Per mile rates for third class fares shall be revised as in the table below and second class fares shall be 1.75, and first class fares, 2.75 times third class fares, instead of 1.50 and 2.50 respectively as at present, these revisions being in force on and after July 16.

	Revised Rates Sen	*Present Rates* Sen
50 m. and under	2.00	1.65
Under 100 m.	1.60	1.30
Under 200 m.	1.30	1.00
Under 300 m.	1.00	0.80
Above 300 m.	0.80	0.70

Comparative table of revised fares and present ones for some principal sections:

Sections	*3d Class Revised Fares*	*Present Fares*	*Difference*
Tokyo-Yokohama	0.37	0.30	0.07
„ -Kozu	0.97	0.80	0.17
„ -Nagoya	3.45	2.76	0.69
„ -Osaka	4.55	3.67	0.88
„ -Shimonoseki	7.35	6.12	1.23
„ -Kagoshima	9.26	7.79	1.47
Kyoto-Osaka	0.54	0.45	0.09

Steamer fares, luggage and parcels rates, and other charges will be raised at nearly the same rate as for railway fares, and the increase in passenger receipts is expected to be about 25%.

The revised charges for express trains and sleeping berths are as follow:

Express Charges:—Ordinary Express Trains: First class Yen 2.50; second class Yen 1.50; third class Yen 0.75.

Limited Express Trains:—Under 400 m., second class, Yen 3.00; first class Yen 4.00. 400 m. and above, second class, Yen 4.00; first class Yen 6.00.

Sleeping Berths on Trains:—Second class simple berth single, upper, Yen 0.40 per person per night; lower, Yen 0.80 per person per night; second class berth, single, Yen 3.00 per person per night; double, Yen 4.50 per person per night; first class berth, single, Yen 5.00 per person per night.

(B) Freight rates will be increased by about 20%, and at the same time the general rates applicable on the San-yo Lines and ton consignment rates will be abolished—all to be in force on and after September 1. However, carload consignment rates for the following goods will remain as at present for the time being: Rice, wheat and barley, salt, vegetables, *miso*, *shoyu*, manure, firewood, charcoal, salted fish, fresh or live fish, state textbooks, roll paper for newspapers.

In order to cope with the abnormal increase in volume of passenger and freight traffic which has been witnessed for the last one or two years owing to war conditions, the Imperial Government Railways have done everything that lay in their power, such as the improvement of tracks, additions to rolling stock and connecting steamers, the increase of the number of employees, the betterment of car utilization, etc. These efforts have been rewarded by an increase in the hauling capacity of more than 40% in the case of passengers and more than 50% in the case of freight, and at present a greater volume of traffic is actually being handled. For all this, the hauling capacity is not yet sufficient fully to meet the demands of the general public, and an accumulation of goods at stations and an inability to accommodate all passengers intending to board trains have resulted.

In such circumstances, the Imperial Government Railways are prepared to make further efforts in all phases of railway

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

The Transportation Conference called by the Peking Ministry of Communications met on the 24th of June. Each of the Government railways sent representatives to attend the conference.

Mr. Sui, who was entrusted with the repairing of the Chi-ho bridge of the Kin-Han line reports that the bridge has been completed. The Ministry has appointed Technical Inspector Shen Chi to inspect the work.

The Szepingchai-Chengchiatun Railway has been operated for half a year already. The railway will hold the opening ceremony on the 1st of July and invitations to Chinese and foreign friends have been issued.

Japan's Communications Receipts.—According to the returns of the Communications Office, at the end of May from the beginning of April, the Communications receipts ran up to G.Y.1,192,344, being the respective increases by G. Y.2,908,334, and G. Y.2,082,990 on the estimated receipts and receipts for the corresponding period of last year. The aggregate receipts of the Railways for the current fiscal year are now estimated at Y.323,000,000 as a result of the raising of the passenger and freight tariffs, as against the original estimate of Y.220,000,000.

Chinese Eastern Railway.—According to the announcement of the Chinese Eastern Railway, Harbin, the Directorate of the Railway was organized as under at a general meeting at Peking on April 14:

Lieut.-Gen. Horwath, Managing Director.

M. Poutiloff, Vice Admiral Korchak, M. Usturgoff, M. Konovaloff, M. Slauta, M. Yenshihching, and another Russian gentleman, Directors.

Lieut.-Gen. Horwath is authorized to act for M. Wentzel, Vice President, in the latter's absence, and M. Lachnoff (Vice Director) to act for Director in the absence of Lieut. Gen. Horwath.

Congested Supplies at Changchun.—The accumulations of goods lying congested at Changchun have decreased from over 200,000 tons to 120,000 tons. No through goods from the Chinese Eastern Railway will be accepted for southward transportation until after the congestion is further relieved.

Ario Railway Bought.—By a Japanese Cabinet Ordinance, the price for the purchase of the Ario Railway was fixed at G. Y.1,900,000, payable in public bonds to the face value of G. Y.2,054,000.

Light Rail Line from Sungari to Inner Mongolia.—Mr. Kao (a wealthy Chinese merchant of Dolon Nor) has applied to the Communications Office, Peking, for permission to construct a light rail line from the Sungari to Inner Mongolia.

South Manchuria Railway Revenue.—A rough estimate of the income of the South Manchuria Railway for the month of May amounts to Y.742,754 from passenger traffic, Y.2,508,513 from freight, Y.77,089 from warehouses, and Y.123,692 from miscellaneous sources, making a total of over Y.3,452,000. Compared with April, this shows a decrease by Y.197,844 in the income from passenger fares, Y.273,539 in freights, Y.412 in warehouses, and Y.17,071 in miscellaneous revenue.

Cable Railway in Japan.—The first cable railway built in Japan was opened to traffic June 20 over Ikoma Yama (Kawachi Province), in Nara Prefecture. Work on this section of the Ikoma-Yamato Railway was begun in the spring of 1916. It enters the mountain from a place about forty ken off Ikoma Station, and has an inclined length of about seventy chains to the top. Half way up the incline there is a switch which passes cars on the way down. The carriages have fifty seats each. The train attains a speed of four miles an hour.

Kowloon-Canton Railway Branches.—In the annual report for 1917 of the Kowloon Canton Railway (British section), it is stated that detailed surveys of possible routes for branch lines to points at Taikoktsui on the western side of the peninsula and to Taiwan Bay on the eastern side were undertaken during the year, with a view to earmarking the land necessary for such branch lines, but much still remains to be done before definite routes can be decided upon or estimates prepared, as both traverse difficult country and cross several public highways.

Shanghai Tramways.—(Foreign Settlement.) The following is the traffic return of the Shanghai Tramways (Foreign Settlement) for the month of June, 1918, and for six months ended June 30, 1918, with figures for the corresponding periods last year:

	June, 1918	June, 1917
	$	$
Gross receipts	134,811.69	129,668.58
Loss by currency depreciation	30,535.61	28,846.86
Effective receipts	104,276.08	100,821.72
Percentage of loss by currency depreciation...	24.06	23.70
Car miles run	333,163	342,784
Passengers Carried... ...	6,179,542	5,937,399

	6 months ended June 30, 1918	6 months ended June 30, 1917
	$	$
Gross receipts	814,656.56	784,518.20
Loss by currency depreciation	180,307.95	174,225.04
Effective Receipts	634,348.61	610,293.16
Percentage of loss by currency depreciation.	23.45	23.53
Car miles run	1,998,287	2,010,924
Passengers carried ...	37,050,770	35,416,751

HARBORS, DOCKS, Etc.

Dairen Wharves.—The South Manchuria Railway Company, proposes to reclaim the shore front at Dalny from the eastern end of the reclaimed land at Jijiko eastward to near the northern extremity of the Inflammable Goods Pier. The date of completion is put at December 31, 1919.

Kawasaki Dockyard Co.—The net profit realized by the Kawasaki Dockyard Co. during the first half of this year just ended amounted to Y.14,030,000. The shareholders' general meeting is to be held on the 28th inst. and a dividend of 40% will be declared.

Increase of Capital by Shipbuilding Yards.—The Asahi Shipbuilding Co., Tokyo, and the Osaka Shipbuilding Co. propose to increase their capitals and are ready to refer the matter to their respective shareholders' meetings to be held shortly. The former is capitalized at Y.1,000,000 which amount will be doubled or perhaps trebled. The latter has a capital of Y.1,500,000 which will be increased to Y.5,000,000.

Dredging at Tsingtao.—An up-to-date dredger loaned by the South Manchuria Railway Co., Dalny, is now dredging the junk harbor at Tsingtao.

Osaka Dockyard Co.—A dockyard company under the style of the Osaka Dockyard Co. made its début recently. A good number of powerful business men at Osaka and Kobe are interested together with a number of those at Tokyo. The capital amounts to Y.1,000,000 divided into 20,000 shares of Y.50 each.

Improving Nagoya Harbor.—The improvement of the Nagoya harbor, for which an appropriation of Y.15,000,000 is estimated is being discussed. It is planned to dredge the harbor to a depth of thirty feet so that three 12,000 ton ships and more than ten smaller ships may be moored in the port. With the earth obtained by dredging a large tract of ground on the shore will be reclaimed. The plan also includes the extension of the breakwater and quay and other improvements.

Lighthouses along Chosen Coast.—The lighthouses along the Chosen coast including the dependent islands number ninety for the coast line extending 8,450 miles, at the rate of one for about every ninety-four miles of coast line. The average in Japan is fifty-one miles; in Formosa, forty miles; in Europe, 12 miles. The authorities concerned intend to construct 160 more lighthouses at an estimated outlay of Y. 2,500,000 in the course of a few years.

INDUSTRIAL

Match Companies Merged.—The Tan-feng Match Company of Peking, promoted by Mr. Chow Tsz-chi several years ago, was amalgamated with the Hua-chang Match

China Electric Company, Limited.

It was officially announced by the Ministry of Communications, just as we went to press with last issue, that a Company had been formed by the Ministry and the Western Electric Company, Incorporated, and the Nippon Electric Company, Limited, to be known as the China Electric Company, Limited, for the establishment of a manufacturing plant in China to produce telephone and telegraph apparatus and other electrical materials. The Company is capitalized at one million dollars, one-half being subscribed by the Ministry and the remainder equally by the Electric Companies.

The Directors who have been elected for the first year are: Yeh Kung-cho (Vice-Minister of Communications), President and Chairman of the Board; Chow Kia-ni (Director-General of Telegraphs); Ho Yuan-han (Chief of General Department of Telegraphs); Riuji Nakayama; and Clark H. Minor.

Mr. Minor is to be General Manager of the Company, K. T. Long (recently Assistant Superintendent of the Tientsin Telephone Administration) Assistant Manager, and Mr. G. R. Howatt, Secretary-Treasurer. The Assistant Treasurer, who will be Chinese, will be named at the next meeting of the Board of Directors.

This Company has been formed for the express purpose of manufacturing and supplying telephone, telegraph, and general electrical material required by the Chinese Telegraph Administration, as well as other Chinese companies. The head office will be at Peking, and a branch office will be maintained at Shanghai.

Under the terms of the contract between the Ministry and the Electric Companies, the China Electric Company, Limited, will become sole agents in China for the Western Electric Company, Inc., and the Nippon Electric Company, Ltd., and will have the privilege of all of the patents, inventions, advice and experience of both of these very successful electrical manufacturing companies. The China Electric Company, Limited, will sell all kinds of electrical material and apparatus, and is now ready to transact business.

The establishment of such a Company has been contemplated for several years, but heretofore the Electrical Companies did not feel inclined to start manufacturing in China. Recently, however, the present officials of the Ministry of Communications have been successful in inducing the Electric Companies to co-operate with them in this project, and the Ministry is much gratified with the successful establishment of the Company.

The Western Electric Company, Inc., is the great telephone manufacturing Company which supplies the material used by the American Telephone and Telegraph Company, and has established factories in other large countries of the world in conjunction with the capitalists of those countries, where it has worked successfully through the following foreign allied houses: Northern Electric Company, Ltd., Montreal; Western Electric Company, Ltd., London; Le Material Telephonique, Paris; Bell Telephone Manufacturing Co., Antwerp; Western Electric Italiana, Milan; N. C. Heisler & Co., Petrograd; Nippon Electric Co., Ltd., Tokyo.

Mr. Minor, who recently arrived in Peking, has for several years past been the Manager of Le Material Telephonique at Paris and the Bell Telephone Manufacturing Company at Antwerp, and has had much experience in the manufacture and sale of telephone and telegraph equipment to the Scandinavian, Danish, Dutch, Belgian, French, Italian, Swiss, Spanish, South American and Australian operating companies.

The very harmonious and satisfactory results from the co-operation of the Western Electric Company, Inc., in Japan with the Nippon Electric Company, Ltd., during the past twenty years has been gratifying to the officials of both countries and the parties concerned, and the Ministry of Communications is very sanguine for the future development of the China Electric Company, Limited.

China-Japan Industrial Development Co.

The China-Japan Industrial Company, according to the annual report of the company for the last fiscal year, has been in existence for four years, and during that time has engaged in various undertakings in China. Owing to the political instability in China and other obstacles placed in its way, the company admits that its enterprises have not borne as much fruit as they might otherwise have done. The following is a summary taken from the report:

1.—It was expected that by July, this year, the work of constructing the railway for carrying ores from the iron mine in China, would be completed, and traffic commenced at once. A mine in Anhui was fast being brought to a stage of operation on a business basis. Taking advantage of the special privileges secured by the company for selling material for telephone construction as a result of the telephone loan, the company succeeded in the bid for supplying about Yen 600,000 worth of material to the Department of Communications of the Chinese Government, securing a reasonable amount of profit from the commission. The work of constructing telephones for Wuchang and Hankow was completed during the year under review.

2.—Several new undertakings were entered into by the company. Efforts were being made to secure concessions for working three new mines, which were promising ones from a business point of view, and when the concessions are secured the company will begin operations.

The company entered into definite undertakings with regard to electrical enterprises. A loan of Yen 80,000 was made to the Hengchow Electric Light Company, in Hunan; another of Yen 250,000 to four electric light companies in Hsiajen, Chinghai, Hsiaking, and Pinhu in Chekiang; and another of Yen 150,000 to the Shantan Electric Light Company of Hunan. From these different companies, the China-Japan Industrial Development Company obtained contracts to instal electric light plants. Expert engineers were recommended to them, and the work was fast making progress. There were more than ten electric enterprises being negotiated for, so that during the present fiscal year the company will have quite a handful of work to do.

3.—During the past fiscal year, the company has made other loans to China, such as the loan of Yen 5,000,000 for repairing damages from flood in Chihli Province, of Yen 1,500,000 for industrial development of Shantung, etc. The company has also made loans of Yen 1,150,000 for a spinning industry, and Taels 50,000 for a metal refining industry, etc.

In the line of investments the company purchased a considerable amount of shares of the Oriental Steel Corporation, the Oriental Salt Manufacturing Company, the Exchange Bank of China, etc. The company was intending to purchase shares of the Oriental Ore Transportation Company. This latter company and the Orient Salt Company have been organized with the initiative of the China-Japan Industrial Development Company. The company intended to own one-third of the shares of these two companies.

The gross profits of the company for the year between April 1st, 1917, and March 31st, 1918, amounted to Yen 223,426.06, and the total running expenses to Yen 216,610.28; balance as net profits for that year having been Yen 6,815.75. This amount having been deducted from the net losses carried over from the year preceding (Yen 23,529.94), the net losses carried forward to the present fiscal year amounted to Yen 16,714.16.

The Nanchang-Kiukiang Railway.

Mr. Li Sheng-tao, of the Nanchang-Kiukiang Railway, Kiangsi, recently paid a flying visit to Peking. When interviewed by a press correspondent, Li said that owing to various reasons the Nan-Hsun line had made no progress during the course of the last few years so that up to the present moment, the railway owed the Japanese Asiatic Development Company the sum of $7,500,000. Unless the Central Government came forward to do something for the railway company, the Japanese would probably take over its interest in accordance with the loan agreements. But the Ministry of Communications refused to make the Nan-Hsun Line a government-owned railway on account of its annual losses so that the best way was to hand it over to the Japanese for its extension to Fukien and Chekiang.

According to a later report the Japanese loan of $50,000,000 for the extension of the Nanchang-Kiukiang Railway to Santuao in Fukien would soon be signed. The Japanese agent in the loan is Mr. Tachibana of the Toa Kogyo Kaisha, but the agents on the side of China have not yet been ascertained. The draft agreement is said to have been prepared.

If a local report is to be believed serious trouble is expected in connection with the loan. The British Minister, the report says, has already inquired of the Chinese authorities concerning this matter, as it would involve a conflict with British interests, should that line actually fall into the hands of Japan; but the Government has not yet given him any reply. Another report

says that according to a Shanghai letter, the Fukien merchants in that port are making strenuous efforts to oppose the loan, as it would affect the interests of their native province.

The proposed extension is meeting with great opposition from the people of Kwangtung, Kiangsi and Fukien provinces on the ground that this extension, if actually carried out, will mean complete Japanese domination of their provinces in the course of a few years. The people of Fukien are the bitterest opponents of the Japanese scheme because, in their belief, the extension will make Fukien a real Japanese province instead of Japanese sphere of influence. As the said railway is not owned or administered by the Ministry of Communications the negotiations are being carried on by the Japanese with their Chinese friends directly.

Another report says that the people of Kiangsi, Kwangtung, Fukien and Chekiang have petitioned the government opposing the proposed mortgage of the railway and urging that the Ministry of Communications should take over the administration of the line without delay despite its present loss. The natives of Kiangsi say that the provincial assembly at Nanchang should convene a special meeting to raising funds to pay off the Japanese creditors of the line otherwise it is feared that the British Legation will protest against its transfer, etc.

The Japanese paper *Chugai Shogyo* is astounded at the stupendousness of American war expenditure, which America alone can bear. The paper derides its own countrymen who are almost crazed with joy and pride, says the *Japan Times*, for having made no more than the comparatively small sum of Yen 1,200,000,000 in consequence of the war.

Speaking through the editorial columns of the *Yomiuri*, Marquis Kido, an official of the Japanese Bureau of Special Industrial Enquiry, says cotton spinning was one of the first industries to develop from family work into factory industry in Japan. It now commanded Yen 160,000,000 as the total capital invested in it, and produced annually 1,924,000 bales of cotton yarn with 3.500,000 spindles in operation, using 680,000,000 kin of cotton. The greatest problem lying before this industry was where to get the raw material. The Marquis heartily endorsed the project to make common cause with the cotton producers of China.

Awaji Shima. near the Kobe entrance of the Inland Sea, the favorite isle of Japanese poets, is said to be slowly but steadily disappearing. It is estimated that during the last ten years the sea has encroached upon the island a distance of some 360-ft. on an average all round.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912,

Of The Far Eastern Review published Monthly at Shanghai, China, for April 1st, 1917.

Republic of China Province of Kiangsu City of Shanghai.

Before me a Vice-Consul for the United States in and for the State and county aforesaid, personally appeared W. H. Donald, who, having been duly sworn according to law, deposes and says that he is the Editor and Part Proprietor of the Far Eastern Review and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing, editor, and business managers are:

Name of

Publisher: George Bronson Rea, 5 Jinkee Road, Shanghai, China.
Editor: William Henry Donald, 23 Tsongpu Hutung, Peking, China.
Associate Editor: Rodney Gilbert, 5 Jinkee Road, Shanghai, China.
Business Managers: None.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stock-holders owning or holding 1 per cent. or more of the total amount of stock).

George Bronson Rea and William Henry Donald.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state).

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given: also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a *bonâ fide* owner: and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

(Sgd.) W. H. Donald, Editor, Part proprietor.

(Signature of editor, publisher, business manager, or owner).

Sworn to and subscribed before me this first day of July, 1918.

[S.S.] Walter A. Adams,
American Vice-Consul, Shanghai.

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS.

Peking-Suiyuan Railway.—Latest reports state that the operating revenues of the Peking-Suiyuan Line for June this year, when compared with the corresponding period of the previous year, show an increase. The following table will show the comparative figures:

Revenue for June, 1918, $335,811; 1917, $280,036. Increase $55,775.

Revenue for period January to June, 1918, $2,131,302; 1917, $1,781,549. Increase $349,753.

Railway Extension.—It is reported that negotiations for a loan for an extension of the Supingchie-Chengtiatung Railway from Chengtiatung to Kailu, about 100 miles, have been opened. This extension is considered to be a very promising line, as it will tap the kaoliang and wheat districts in the level country along the proposed route.

South Manchuria Railway Co.'s Accounts.—The South Manchuria Railway Company held its 17th annual meeting of shareholders on June 22nd, at which the accounts for the past fiscal year were approved, with a recommendation of dividends to be paid; 6 per cent. as first dividend and 2 per cent. second dividend. The bonds of the company, it was decided, will be increased by Y. 60,000,000. The following is a partial statement of the accounts:—

The gross profits were Y. 69,429,252, including: Receipts from railway operation, Y.34,457,922; receipts from shipping, Y.3,616,633; receipts from ports, Y.3,499,934; receipts from mining enterprises, Y.20,368,463; receipts from manufacturing, Y.1,545,331; receipts from electrical industry, Y.1.583,760; receipts from gas enterprises, Y.352,261; receipts from hotel enterprises, Y.475.-312; receipts from different localities, Y.1,930,284; receipts from miscellaneous sources, Y.394,245.

The total expenditure was Y.54,503,609 including: Railway expenses, Y. 10,858,-734; shipping expenses Y.2,553,348; port expenses, Y.3,106,861; mining expenses, Y.15,047,917; manufacturing expenses, Y.840,886; electrical enterprises expenses, Y.948,447; gas expenses, Y.159,852; hotel expenses, Y.438,702; local expenses, Y.3,538,708; miscellaneous expenses, Y.3,881,965; interest on bonds, Y.5,886,660; general expenses, Y.4,405,013; difference between face value of bonds and actual receipts, Y.2,806,512. Balance, profits, Y. 14,925,642.

Bangkok - Penang Railway Connection.—Railway connection has been established between Bangkok (Siam) and Penang (Federated Malay States), by a junction between the Siamese Southern line and the F.M.S. line through Kedah and Perlis. The first trains ran on July

If a prospector has found a good-sized vein and the ore is not high in value, but sufficient to pay even a small margin over the milling-cost, the prospector is allowed a higher percentage, in the hope of his developing a profitable mine when he gets his workings a little deeper. This larger percentage also applies to prospects that are at a long distance from the company's mill, in order to compensate for the long haul. The tributer is also assisted in the furtherance of his work—once he has proved that he has a prospect of any value—by supplies from the company's store, where any tools, explosives, and candles will be sold to him at cost, and the amount deducted from his next shipment of ore. This is a great advantage to the natives, as otherwise they could not get explosives at all for small operations, the Japanese government officials being very strict, and all explosives must be carefully accounted for at the end of the month.

Chinese Railway Reports for 1917

Shanghai-Nanking Railway

In his report for 1917, Mr. C. P. Yin, Managing Director of the Shanghai-Nanking Railway, says: It is gratifying to note that notwithstanding the heavy cost of railway stores and shortage of rolling-stock the net revenue for 1917 has surpassed that for any of the previous years since the opening of the line to traffic. This revenue would have covered the interest charges and shown net profits even though adverse rates of exchange had been met with.

Attention may also be called to the fact that the year in view has witnessed very satisfactory results in developing the goods traffic and that through traffic was made possible with the Shanghai-Hangchow-Ningpo Railway toward the end of 1916. With a sufficient supply of rolling-stock it will not be surprising to see the volume of traffic along this line increase to a considerable extent.

The General Manager (Mr. A. C. Clear) reports as follows on the working of the Railway for the year ending December 31, 1917:— ,

FINANCIAL RESULTS.

The following table compares the financial results of the year with those of the four previous years. For purpose of comparison with previous years the percentage of operating expenses on operating revenue is shown both with and without depreciation charges. These charges were not made prior to 1915:—

Year		1913	1914	1915	1916	1917
1. Operating Revenues	...	3,027,356	3,197,337	3,418,058	3,818,270	4,179,809
2. Do. Expenses	..	1,877,330	1,986,460	2,023,654	1,904,016	2,203,246
3. Percentage 2 on 1	.....	62.01	62.13	54.17	46.07	49.25
		(including Depreciation charges)		59.20	49.87	52.71
4. Net Revenue	.....	1,150,026	1,210,877	1,394,404	1,914,254	1,976,563
5. Interest on Loan (in sterling £		145,362½	154,385	154,385	154,385	154,385
Loan (rate per £ in $		10.05	11.70	11.67	8.54	7.24
Loan (in Mexican $		1,460,817	1,806,178	1,801,593	1,318,358	1,117,719
6. Percentage of 4 on Mortgage Bonds	...	3.94	3.36	3.88	7.35	8.95

The increase in operating revenue is good under the difficult conditions prevailing throughout the year. These are detailed under the various branches of working affected.

The greatly enhanced price of stores is responsible for the increase in operating expenses. Even so, the percentage of operating expenses on operating revenues has been maintained at a reasonable figure.

The increase in surplus profits is due to a large extent to high rates of exchange, but against this must be offset the extraordinary increases in cost of stores. To obtain a better perspective of the Railway's progress it is recommended to take the most adverse conditions of exchange in 1914, it will then be seen that a surplus would still have been recorded for the year under review. The financial results obtained for 1917 may, therefore, be considered satisfactory.

The income statement shows a surplus of $742,514.70 for the year. An increase of $246,926.87 over that of 1916.

OPERATING REVENUES.

The following table gives a comparison of the results for three successive years:—

Year	1915	1916	1917
	$	$	$
1. PASSENGER SERVICE			
(a) Passengers	2,431,040	2,634,595	2,775,201
(b) Other	75,960	104,904	148,030
2. GOODS SERVICE			
(a) Goods	841,002	968,951	1,082,314
(b) Other	38,044	42,860	95,554
3. OTHER OPERATING REVENUES	31,457	65,556	76,682
4. AUXILIARY OPERATIONS	555	1,404	2,025
Total	3,418,058	3,818,270	4,179,809

All the heads show steady development.

PASSENGER TRAFFIC.

The following table shows the results for "Ordinary" traffic for three successive years:—

Class	1915 No.	1915 Amount $	1916 No.	1916 Amount $	1917 No	1917 Amount $
1st ...	37,124	121,971	40,263	131,215	42,504	143,633
2nd ...	147,328	207,209	171,045	254,590	188,076	253,860
3rd ...	4,396,426	1,680,564	4,583,980	1,783,604	4,785,107	1,826,315
Coolie ...	834,688	325,605	910,307	376,196	1,108,894	445,109

All classes of traffic show a satisfactory rise in 1917 and a steady development from 1915.

The reduction of the coolie class fare in 1915 between Chinkiang and Nanking, to meet the launch competition, is now resulting in considerable development. This has not been attained at the expense of 3rd-class traffic, as satisfactory increases are also shown here:—

Year	3rd class No.	3rd class Amount $	Coolie class No.	Coolie class Amount $	Total No.	Total Amount $
1914	222,474	93,090	33,728	8,741	256,202	101,831
1915	190,694	77,030	88,507	21,070	279,201	98,100
1916	188,840	74,681	91,850	21,978	280,690	96,659
1917	202,168	80,772	155,997	37,944	358,165	118,716

The revenue from this traffic now exceeds that for 1914, with the additional advantage of attracting over 100,000 more passengers to the Railway.

THROUGH TRAFFIC.

Development continues in spite of the partial suspension of traffic for nearly two months owing to floods on the Tientsin-Pukow Railway. The greater proportion of parcels traffic still originates on the Shanghai-Nanking Railway.

The following table gives the total earnings of the six participating railways from the commencement of this traffic :—

Year	Total revenue for all Railways	Percentage of increase over previous years	Shanghai-Nanking Railway's share	
			Amount.	Percentage of total revenues
	$	%	$	%
1914 (9 months only)...	636,282	—	42,258	6.64
1915	1,126,541	77.05	84,562	7.51
1916	1,438,257	27.67	122,935	8.55
1917	1,629,769	13.32	137,990	8.47

Of the total traffic in 1917 about 25 per cent. originated on this Railway. Our share of the total revenue, however, is considerably below this percentage.

The Shanghai-Hangchow-Ningpo Railway was admitted to participation in through traffic commencing from the 1st January, 1917.

LOCAL THROUGH TRAFFIC.

The junction line connecting this Railway with the Shanghai-Hangchow-Ningpo Railway was opened to through passenger traffic on the 12th December, 1916, and through goods rates were quoted from the 13th April, 1917.

The following are the results for 1917 :—

		Revenue	S.N.R. share.	S.H.N.R. share.
		$	$	$
Passengers	No. 29,759	104,702	61,241	43,461
Goods	Tons 10,301	32,915	19,633	13,282
	Total	$80,874	$56,743	

Considerable development may be expected in this traffic as improvements in administration are permitted to be brought about.

CARRIAGE OF SPECIE.

The following shows the results of this traffic for the past three years :—

Year		1915	1916	1917
Value of coins carried	$	121,125,357	120,615,731	115,154,083
Weight of do.	Pcls.	51,451	59,753	63,156
Freight earned	$	31,276	39,868	47,514

The increased revenue in 1917 is due to the further revision of the agreement with the specie carrier, 50 per cent. of the tariff receipts are now paid to the Railway as compared with 40 per cent. for 1915 and 45 per cent. for 1916. The final adjustment is thus reached in this agreement.

PARCELS.

This traffic continues to improve :—

	1914	1915	1916	1917
Revenue	$14,283	$20,671	$34,927	$43,163

POSTAL.

The annual fee received from the Post Office has been raised from $1,000 to $2,000 per annum. This sum is still totally inadequate to meet the actual costs to the Railway for services rendered. Further representations on this subject will continue to be made.

GOODS TRAFFIC.

Satisfactory increases are recorded in this traffic during the year.

The results give greater satisfaction when it is taken into consideration that, owing to lack of transporting facilities from the North, the decrease in revenue under "Agricultural products" for beans, ground nuts and sesamum seed amounted to approximately $110,000 as compared with 1916. On the other hand rice traffic, from Wuhu, increased our revenue by about $88,000. This is gratifying as opening up a new source of revenue for the Railway. "Animal" and "Mineral" products and "Manufactures" all show substantial increases, whilst there is a slight decrease in "Forest" products.

GOODS EARNING IN "UP" DIRECTION.

Considerable strides have been made in the development of this traffic. The earnings for the past four years being :—

1914	1915	1916	1917
$165,260	$206,972	$221,008	$314,440

OPERATING EXPENSES.

The following table compares the results for the year with those for the previous year :

	1916		1917	
	Amount	Percentage	Amount	Percentage
	$		$	
	298,326	7.81	313,612	7.50
	378,706	9.92	521,016	12.47
	479,508	12.56	550,134	13.16
	430,323	11.27	468,294	11.20
	317,152	8.31	350,190	8.38
Total	1,904,015	49.87	2,203,246	52.71

DISCOUNT ON DEPRECIATED CURRENCY.

A revised system of premium charges to reduce the loss on subsidiary coins was introduced from the 1st January, 1917, based on a rate of 20 per cent., with a fixed rate of 12 one cent copper coins as being equal to one silver 10-cent piece. Although this had the effect of reducing the number of small coins received, the rate of premium being in excess of the normal market rate, gave scope for manipulation by the station staff. A modified arrangement was introduced on March 1st, 1917, based on 12½ per cent. on small silver and 25 per cent. on copper coins.

This has proved satisfactory as the following figures show :—

Year		1912	1913	1914	1915	1916	1917
Net Loss	$	73.749	69.680	41.176	31.541	43.327	24.558
Percentage on Revenue	%	2.76	2.30	1.29	0.92	1.13	0.59
Average market rates for small silver	%	13.54	12.52	11.94	11.10	12.33	11.64

The revenue from passenger service per passenger train-mile has dropped from $3.27 to $3.16. At the higher figure trains were overcrowded and an extension of the service became necessary. Even at the present figure trains are uncomfortably full. A revenue approximating $3.00 per passenger train-mile would compare favourably with the great majority of railways in the world.

For goods service revenue per goods train-mile a satisfactory increase from $2.48 to $2.82 is recorded.

The average revenue per ton hauled has risen from $1.08 to $1.18.

The increased cost of materials, etc., is indicated by the general increases per train and per thousand vehicle-miles. The cost of coal has risen from $18.74 to $21.50 per thousand vehicle-miles.

The average cost of repairs per locomotive has risen from $2,539 to $3,174. This is due to increased cost of stores and heavy repairs rendered necessary by the amount of work required from our engines to cope with traffic requirements.

CAPITAL EXPENDITURES.

PART I.—CONSTRUCTION ACCOUNTS.

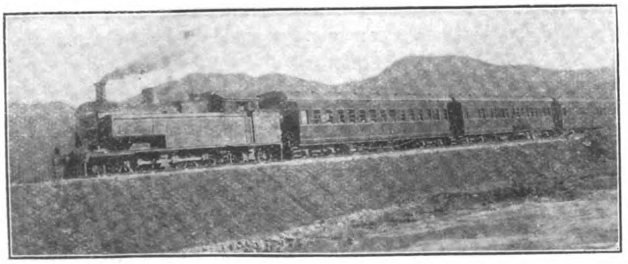
Main Head	During the year: Additions and Betterments	Property abandoned	Net Capital expenditures	At the end of the year
C-1 —General Expenditures				$2,403,516.03
C-2 —Preliminary Expenditures				47,061.25
C-3 —Land				2,981,035.25
C-4 —Formation	$13,922.00		$13,922.00	2,079,109.72
C-5 —Tunnels				374,642.40
C-6 —Bridgework				2,734,178.25
C-7 —Line Protection				64,924.01
C-8 —Telegraphs and Telephones				104,479.55
C-9 —Track	5,805.00	$11,533.25	5,728.28	7,153,095.49
C-10—Signals and Switches	15,144.81	1,009.80	14,135.01	111,913.76
C-11—Stations & Buildings	5,968.00	15,250.96	9,282.96	2,526,492.16
C-12—Central Mechanical Works	2,772.10		2,772.10	575,147.11
C-13—Special Mechanical Works				128,117.28
C-14—Plant				347,840.30
C-15—Rolling-Stock	39,534.34	30,573.59	8,960.75	4,930,567.77
C-16—Maintenance				—
C-17—Docks, Harbours & Wharves	30,709.30	3,148.00	27,561.30	638,749.28
C-18—Floating Equipment				
Total Part I	$113,855.55	$61,515.63	$52,339.92	$27,200,869.62

PART II.—FINANCIAL ACCOUNTS.

C-19—Interest during Construction				$3,133,610.02
C-20—Exchange				189,843.94
C-21—Land Exchange				12,667.59
C-22—Commission				622,437.17
C-23—Nanyang College				13,698.63
C-24—Likin Confiscation				5,240.60
Total Part II				$3,977,497.95
Total Parts I and II	$113,855.55	$61,515.63	$52,339.92	$31,178,367.57
Deduct—Recepits on Capital Account				641,610.55
Cost of Road and Equipment	113,855.55	61,515.63	52,339.92	30,536,757.02
Cost of Other Physical Property				—
Cost of Non-Physical Assets				—
Total Cost of Property carried to Balance Sheet	$113,855.55	$61,515.63	$52,339.92	$30,536,757.02

Kowloon-Canton Railway

Mr. H. P. Winslow, Manager of the British Section of the Kowloon-Canton Railway, in his report on the operation of the British Section of the line during 1917 says :— During the year the passenger portion of the Kowloon Station has been somewhat improved by alterations to the Chinese Customs examination accommodation. The outward baggage barriers have been extended which expedites the work of examination while the addition of a waiting-room for Customs officials, and the extension of the baggage barriers for the examination of inward passenger traffic afford further facilities.



ON THE KOWLOON-CANTON LINE.

Detailed surveys of possible routes for branch lines to points at Tai Kok Tsui on the western side of the peninsula and to Tai Wan Bay on the eastern side were undertaken during the year, with a view to earmarking the land necessary for such branch lines, but much still remains to be done before definite routes can be decided upon or estimates prepared, as both traverse difficult country and cross several public highways.

At the end of 1916 it was decided to close the capital account and in future to charge all expenses other than revenue to the head of Special Expenditure. The amount included in the estimates for this purpose was $159,896 and during the year at various times other sums were voted making a total of $273,069.68. Of this, however, only $101,460.48 was actually expended and the details are shown in the table of expenditure herein.

In April $97,864.89 was voted for the erection of a goods examination shed but as the building was not finished at the end of the year only $63,707.23 was expended and the amount needed to complete the building will appear in the 1918 accounts.

The special expenditure has been added in a summary to the capital account which now stands at $14,812,377.77 main line and Fanling branch $89,808.57.

The revenue statements of earnings and expenditure follow the line previously adopted. The actual expenditure amounted to $337,431.48 against an estimate of $366,405 showing a saving of $28,973.52.

The saving under the head of Personal Emoluments amounted to $15,575.92 partly due to two members of the staff serving with His Majesty's Forces, the transfer of the Inspector of Station Accounts to the Colonial Secretary's Office and other staff changes, also to a smaller extent to a higher rate of exchange prevailing than was anticipated when the estimates were framed.

The savings under the various sub-heads of other charges amounted to $13,397.60. The cost of running stores supplied to engines was $2,800 below the estimate owing to economies effected in the use of oil and other stores, and $2,800 was not required under sub-head commission on goods. The maintenance cost of telephones was $1,000 less than was estimated and traffic stores $800 and smaller amounts under other sub-heads.

In spite of the increased cost of running stores and materials the percentage of expenditure to gross receipts shows a decrease from 81.02 to 78.79.

The local passenger traffic has remained steady the receipts being $119,397.09 or $470.17 less than the previous year, while the local goods traffic has increased from $7,706.81 to $9,985.88 and the sundry receipts amounted to $4,096.52 more than in 1916 which is due to the inclusion of rents collected in respect of reclaimed land let at Hunghom and to wharfage fees.

Through and joint sectional coaching traffic receipts show a marked increase of $41,763.98. This improvement is due to a great extent to the increase in certain joint sectional fares from May 1st and also to a greater number of passengers travelling than in 1916.

The condition of the goods traffic has improved, the receipts being $33,770.69 as against $18,407.50 for the previous year.

The gross receipts for the year were $428,246.46 as against $366,215.67 for 1916, an increase of $62,030.79. The balance after paying working expenses stands at $90,814.98 or $21,290.94 more than the previous year.

The results of the past 6 years are as follow :—

	Gross Receipts.	Working Expenses.	Net Earnings.
1912	$241,649.02	$207,350.78	$34,298.24
1913	333,633.32	245,808.58	87,824.74
1914	364,608.32	274,366.39	90,241.93
1915	343,769.08	297,265.97	46,503.11
1916	366,215.67	296,691.63	69,524.04
1917	428,246.46	337,431.48	90,814.98

The through and joint sectional passengers carried were as follow :—

	1915.	1916.	1917.
Passengers booked by Stations in British Territory to Stations in China	271,382	307,310	309,394
Passengers booked by Stations in China to Stations in British Territory	326,839	344,220	352,008

CONSTRUCTION ACCOUNT—MAIN LINE.

Table of expenditure to the end of the year 1917.

	$
Survey	42,277.65
Land	2,326,740.13
(*a*) Earthwork	2,710,115.50
(*b*) Tunnels	3,819,756.18
(*c*) Roads	130,857.96
(*a*) Major	829,047.22
(*b*) Minor	359,494.39
(*c*) Culverts	71,567.78
(*a*) Boundaries	48,232.06
(*b*) Signs	727.31
Telegraph	41,221.11
(*a*) Ballast	178,828.79
(*b*) Permanent Way	828,243.66
(*a*) Buildings and Fixtures	658,226.34
(*b*) Station Machinery	90,053.02
(*c*) Furniture	21,392.30
(*d*) Workshops	89,899.74
(*a*) Construction	143,518.90
(*b*) Loco Tools and Plant	68,775.91
(*c*) C. and W. Tools and Plant	25.00
(*d*) Engineering	10.00
(*e*) Loco Rolling Stock	418,907.71
(*f*) C. and W. Rolling Stock	634,843.97
(*a*) 1. Salaries and Allowances	443,874.39
2. Quarters and Offices	113,457.39
3. Instruments	10,339.91
4. Office Expenses	35,402.16
5. Medical	23,071.90
6. Home Charges	134,978.80
7. Interest	701,705.62
8. Exchange	*306,794.96*
(*b*) Accounts	41,222.35
Total	$14,710,917.29

N.B.—Figures printed in italics are minus quantities.

Summary.

Construction Expenditure of to the 31st December, 1916	$14,710,917.29
Special Expenditure during the year 1917	101,460.48
Total	$14,812,377.77

CONSTRUCTION ACCOUNT—FANLING BRANCH.

Table of expenditure to the end of the year 1917.

	$
Land	2,389.45
(*a*) Ballast	11.05
(*b*) Permanent Way	46,651.14
(*a*) Station Buildings	3,447.08
(*e*) Locomotive	15,237.89
(*f*) Carriages	21,762.36
(*a*) 1. Salaries	509.60
Total of Fanling Branch Line Construction	$89,806.57

Revenue Account for the year ending 31st December, 1917.

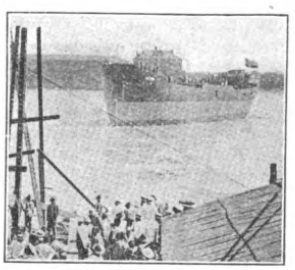
MAIN LINE

Amount 1916.	Per cent. on Gross Receipts	Expenditure	Amount 1917.	Per cent. on Gross Receipts
$	%		$	%
35,834.51	9.78	To Maintenance of Way and Works	44,553.81	10.40
155,316.76	42.41	,, Loco, Carriage and Wagon Expenses	187,971.16	43.89
52,581.25	14.36	,, Traffic Expenses	54,144.44	12.64
42,336.03	11.56	,, General Charges	39,858.76	9.31
94.00	.03	,, Miscellaneous Expenditure	64.20	.01
		BRANCH LINE.		
2,695.28	.74	To Maintenance of Way and Works	2,809.98	.66
6,178.74	1.69	,, Loco, Carriage and Wagon Expenses	6,414.12	1.50
1,655.06	.45	,, Traffic Expenses	1,615.01	.38
..	..	,, General Charges	..	..
..	..	,, Miscellaneous Expenditure	..	..
296,691.63	81.02		$337,431.48	78.79
69,524.04	18.98	,, Balance (Net Earnings)	90,814.98	21.21
$366,215.67	100.00		$428,246.46	100.00

LOCAL.

Amount 1916.	Earnings.	Amount 1917.	Total.
$		$	$
119,867.26	By Coaching Traffic	119,397.09	
7,706.81	,, Goods ,,	9,985.88	
14,225.34	,, Sundry ,,	18,321.86	
141,799.41			
	FOREIGN.		
192,858.29	By Coaching Traffic	234,622.27	
18,407.50	,, Goods ,,	33,770.69	
2,175.25	,, Sundry ,,	2,489.25	
			270,882.21
213,441.04			
	BRANCH LINE.		
10,327.57	By Coaching Traffic	8,809.72	
647.65	,, Goods ,,	849.70	
...	,, Sundry ,,	...	
			9,659.42
10,975.22			
366,215.67			$428,246.46

Another Steamer Launched at Shanghai



On August 9 the New Engineering and Shipbuilding Works, Ltd., of Shanghai, launched the steamer *Hero* for Messrs. Bruusgaard, Kiosterud & Co., Norway. The keel was laid in February of this year, but it was not till April that the raw materials arrived at the yards. The vessel is of the single deck type, 254-ft. 6-in. in length, overall, by 37-ft. beam and 17-ft. depth. The deadweight capacity is 2,050 tons. The engines will be triple expansion of 1,000 tons h.p., steam for which will be supplied by two cylindrical boilers. The vessel is specially adapted for handling cargo, having clear holds and four large hatches on deck. Each hatch has two derricks, with steam winches, the engines, boilers, auxiliary and deck machinery were manufactured at the works. The vessel is expected to be ready for trials in October.

Cessation of Railway Construction Work

The International Corporation which finances the Siems-Carey Company's projects in China is calling a halt with regard to railway work. This is due, of course, to what the country correspondent delights to describe as a "concatenation of circumstances." The necessity which exists to apply every cent and every scrap of possible energy to defeating the Germans is in general responsible. Then the high price of silver exercises considerable influence, coupled with which is the higher cost of railway material. To these factors has to be added the lack of control in the territory in which the surveyors of the projected line from Sinyang to Chengtu, in Szechuan, described in our July issue, must operate to complete their survey. The last condition is the one solely responsible for the suspension of survey work at this time.

Bandits are now keenly on the lookout for engineers accompanied by hard silver. Once upon a time the men of the road used to covet cash only, but the days of such singleness of purpose seem to have passed. They have discovered that real live white engineers are worth bagging. It will be remembered that Chief Engineer Kyle was recently captured by bandits just as he was beginning a walk over the 908 miles of the route to Szechuan. With him the bandits secured some 30,000 silver dollars, and after haling him over miles of landscape for scores of nights they received reward from the Government to let him go. The head bandits were taken into the regular Chinese army! Perhaps this is as it ought to be in China, but it is disconcerting to anyone desirous of doing serious business in the interior.

In the case of this railway stoppage of work means that no further surveying parties can be sent out for some time, and the final survey has, necessarily, to be suspended. A delightful commentary upon the capacity of the Tuchuns who claim the right of dominance of political affairs to run the business which legitimately comes within their own particular sphere!

The result is that until the war is over, until peace can be secured in China, and until the ubiquitous bandit can be compelled to follow more honest avenues of toil the engineers working on the Szechuan project must return to America. A small staff will be maintained in Peking to deal with anything arising as a result of the work so far done and the capital so far expended, but expenses will be reduced to a minimum. The engineers will probably be homeward bound by the end of November, and when they will return to resume their work cannot be foretold with any reliability by any prophet in this hemisphere.

The closing down of the Siems-Carey railway organization practically brings to an end all important railway construction work in China for the time being. There were hopes that the survey of the line of Szechuan would be completed and earthwork be commenced despite the war, but these vain dreams have now been rudely dissipated.

The construction of the British line between Wu-I, near Pukow, and Sinyang, on the Peking-Hankow railway, was arrested at the outbreak of the war, though much of the earthwork had been done. Engineers and laborers were summarily knocked off, offices were closed, and residences newly erected at Wu-I were vacated. The finished embankments are now grass grown and scored by rains, and thousands of people in the region traversed by the route have been deprived of legitimate reproductive work. Had the Chinese Government possessed the wisdom to accept a proposition made in the first year of the war by the banks to supply a silver loan to continue operations the earthwork could have been totally completed long ago, and, as rails could have been secured from the Hanyang Ironworks, the line might have been in operation, even though such operation would have been dependent upon limited rolling stock borrowed from existing lines which can ill-afford to loan material of any kind. Still a makeshift could have been effected. As it is the Government is paying interest on gold money it cannot get and which it would be folly to take and convert into local currency at such high rates for silver as now obtain. By borrowing the silver when it was offered the Government would have saved money, secured work for its people and acquired for itself a profit-earning line through a prosperous district. Instead it has deteriorating property, idle construction equipment, and big interest bills to meet.

On the Wuchang-Canton section of the projected Hukuang system work has also been stopped. Though connection has been made between Wuchang and Changsha, only a portion of the line—from Wuchang to Yochow—is in operation, the operation of the balance being held up by disturbed conditions and lack of funds. The time has come when engineers will have to be shelved for "the duration of the war" at least, and tools downed. Unless order can be restored and financial arrangements made to allow the section between Yochow and Changsha to be opened to traffic a valuable earning factor will be given over to rust.

Enough money has been squandered on the internicine strife of the past year, to say nothing of the past eight years, to build the whole line to Canton, and when it is mentioned that the Northern generals are at this writing waiting on the Treasury for the small sum of $15,000,000 per month to continue the "war" with the Southern forces it can be estimated how much money has been and will be flung to the dogs—enough in fact to build all the lines already surveyed in the country. If it takes $15,000,000 per month to finance the Northern forces how much must the Southern armies require to keep up their end of the merry game? And so far they have managed to sustain themselves to the discomfiture of the Northern forces. Add what the South has spent and will spend to the total squandered by the North and readers will get some idea of the wealth dissipated on a mighty poor national enterprise. Yet this goes on gleefully while the country is without one decent highway, with canals silted, with resources undeveloped, with industry untouched, with the Treasury bankrupt. "High financiers" find it easy to raise most questionable loans on the richest of the country's mineral and other resources, and the patriotic field-marshals and generals and majors and corporals and privates indulge in a wild orgie of expenditure while ever funds can be secured in so simple a manner. Is it any wonder that observers with the welfare of this country at heart are in despair, and are asking how long it will be before the international bailiff puts in his appearance?

"China—a modern Laocoon—is in the toils, being slowly strangled before all eyes by those intent to prey upon her vitals," is how a correspondent of the *North-China Daily News*, writing from a centre where the Northern armies are operating, puts the case.

The Oppressed Chinese

The gloomy mess into which the military leaders in China are driving the country has worked a phenomenon among the publicists, or at least those scribes who live in China. It has ranged them all on one side. Invariably they are at loggerheads, some favoring one side in Chinese politics, some championing another; some espousing this radical reform or that, some decrying any sort of innovation at all. If any now support the military leaders of the North they are preserving a very marked silence. Those who remain articulate are unanimous in their condemnation of the serious and appalling state into which the affairs of the country have been plunged and of the men responsible. The chorus of denunciation is stentorian and strenuous.

That very fact makes it necessary to warn people unacquainted with Chinese affairs that all Chinese are not to be judged by the handful of blind and conscienceless braves and brigands who have managed to seize and hold power simply because they command enough men with rifles to overawe the populace. The military leaders who are desolating the country, disposing of its resources, and demoralising its people can be counted on the fingers. They are powerful because they have behind them hordes of men with rifles; not because merit has secured for them high position in the state. They have made themselves independent of central control, and because of their power for evil they are able to command what they want from whomever they want it. The voice of the people does not reach them. They are oblivious of popular opinion and popular sufferings. They have no knowledge of national affairs, and perhaps little of

China's Railways

The first report covering a full year's operation of the lines constituting the Chinese Government Railways has now been published by the Ministry of Communications. It covers the calendar year 1915. A preliminary report covering the operations of the same lines for the first six months of the same year was issued some time ago. The present report gives the data for the remaining portion of the year, and combines the figures for the two half-years into a total for the year.

This report serves as a conspicuous milestone in the progress of China toward modern ways. Readers are doubtless familiar in a general way with the history of railways in China: how as a foreign innovation it was resisted, how China seemed to be parcelled out among the nations by means of railway concessions, how an announced policy of national railway building as opposed to building by the provinces served to bring about the revolution which dethroned the Manchus.

Most of the present railway lines were built under agreements with foreign financial groups. Under the Empire each line was treated as a separate distinct entity. When the Republic came into power, the organs responsible for railways soon began to realize how much more simple their task would be if there were less diversity in the methods of doing business upon the several lines. It was forthwith decided to make a start toward uniform practice by first providing a uniform classification of accounts. The accounting practice at the time followed French, German, English, and Indian precedents, depending on the previous experience of the chief accounting officer. These foreign accounting officers together with Chinese accountants from the same lines, and from the Ministry of Communications were constituted a commission to frame the uniform classification of accounts. Professor Henry C. Adams, for many years in charge of statistics and accounts for the Interstate Commerce Commission was engaged as adviser. Classifications covering construction, operation, and financial control of the lines, as well as prescribing certain fundamental statistics were promulgated to take effect January 1, 1915. The report just issued, therefore, covers the first year in which the same classification of accounts was used upon all of the lines composing the Chinese Government Railways. Because so many of the definitions and instructions used were essentially on trial, the volume is called a Preliminary Report.

According to this report, the Chinese Government Railways consist of 5,444 kilometres of line—about 3,150 miles. This does not include 276 kilometres of a line which had been recently put into operation, but was technically under construction. Neither does it include 242 kilometres of short lines owned by private interests. Besides, 2,399 kilometres of lines having fiscal autonomy are not included. Among the latter, is the line to Tsingtao in Shantung built by the Germans but now taken over by the Japanese. The line near the Indo-China border built by the French is another of the sort, as well as that portion of the trans-Siberian railway in Manchuria and the line from Harbin to Mukden, which was built by Russia. The map which the report contains, shows the Chinese Government Railways consist of a main system, which is situated principally north of the Yangtze river, and several short disconnected lines upon the fringes of the country. These mark probable objective points for future construction.

The main system now officially in operation extends roughly in the form of a capital K. The upper extremities reach Fengchen near the Mongolian border and Mukden in Manchuria. The lower extremities touch Hankow and Hangchow. The junction of the side stroke with the main stem locates Peking, and the two side strokes come together at Tientsin. There are some branches from the main stem which because of contract arrangements are classed as main lines. One of these has now been constructed through so as to form a sort of cross bar upon the lower part of the latter.

Disregarding the fact that there is no car ferry or bridge over the Yangtze river, 4,915 kilometres out of a total of 5,444 is contiguous line. All of the branch lines are included in these 4,915 kilometres, but have a total of only 369 kilometres. Except for one line of 243 kilometres, which has a gauge of 1 metre, all have the Standard gauge—4-ft. 8½-in.

Although the requirements of through traffic and the unification of accounts tend to emphasize the point of view that the Chinese Government Railways constitute one system, yet the conditions under which most of it was built and under which it is now operated make it necessary to recognize the individuality of separate lines. Fifteen separate names appear in the list of roads. Of these, ten embrace the contiguous line and five represent scattered short lines.

The report contains no data concerning the character of rail and ballast in track, length of tunnels, or number of culverts and length of bridges. Regarding rolling stock, however, the data is rather detailed. Ordinary passenger cars are divided into three principal classes: first, second, and third, freight cars, "goods wagons," are classed as covered, open and special. The last named account for only 279 out of a total of 10,652. Open cars account for 7,982 compared with 2,391 closed cars. The closed cars have an average capacity slightly larger than the open cars. The average for all cars is approximately 46,000-lbs.

The total investment in the Chinese Government railways is given as $409,523,352 (Chinese silver)—an average of $75,226 per kilometre of line, or a little over $121,000 per mile of line. This investment has been made principally by means of mortgage bonds, investment of government funds, and additions to property through surplus. At the close of the year these sources compared as follow:—

Mortgage bonds	$274,040,303.48
Permanent Government Investment ...	108,649,720.90
Additions to property through Surplus	19,464,591.37

The importance of building as economically as possible is emphasized by a table in which it appears that the five lines having the highest cost per kilometre of line were unable to meet all operating and financial obligations; while of the five lines able to meet such obligations, only one had a cost in excess of $70,000 per kilometre of line.

Operating revenues for the year were $57,062,359, or $10,477 per kilometre of line—$16,851 per mile of line. Of this amount, 58 per cent. was obtained from freight, 37 per cent. from passengers, and 5 per cent. from miscellaneous sources. On five of the lines passenger revenue exceeds "Goods" revenue.

With one exception, these five lines were unprofitable. That exception, however, affords an interesting subject. It is a short line—49 kilometres—doing almost exclusively a passenger business out of Canton. It corresponds very closely to the suburban lines which are a common feature of the large centres of population in Europe and America. The success of this line hints at possibilities of this sort in connection with other large cities in China. It has the highest earnings per kilometre of line of any road in China—$17,385.

Operating ratio is remarkably low—53 per cent. The line between Peking and Hankow has an operating ratio as low as 42 per cent. Only one of the lines entering the contiguous system has a percentage above 65. Among operating expenses, general expenses, seem to be unduly high, being 16 per cent. of total. On a considerable number of the lines, this expense is greater than the cost of actually transporting the traffic over the line. This is sometimes explained by the necessity of conducting business in more than one language. But this explanation is hardly adequate. Costs of police forces and bonuses to employees, are large items charged to this head.

Out of net operating revenue amounting to $26,803,828, some $16,415,876 were required for interest payments. Other financial charges required a net of $800,000 in round numbers. Of this, "loss on depreciated currency"—a drain which railways in most other countries do not face—amounted to $44,504. It is well known, however, that since 1915, Chinese railways have suffered considerably more from this cause. Interest charges in China vary widely from year to year due to the effect of fluctuations in the rate of exchange. Interest payments on Chinese Government railways must be paid in foreign denominations. The purchase of a fixed amount of English pounds, say, cost a great many more Chinese dollars in 1915 than in 1916. In 1915 the price of silver was far below its present height.

In computing the interest charges above, nothing was included for return upon funds invested in the system by the Government. At five per cent. this would have amounted to

$5,432,486. Still there remains the tidy sum of $4,151,268, representing the entrepreneur's profit.

Thus out of every dollar of revenue 53 cents goes to cover the cost of operation; 30 cents to cover interest and other income charges; and 17 cents is at the disposal of the Government. If five per cent. interest be allowed on "Permanent Government Investments" nearly 10 cents may be regarded as an investment return and a little over 7 cents as business profit.

After interest on Government investment is allowed for, four lines out of the fifteen show a credit balance for the year. But these four lines comprise 2,468 kilometres out of 5,253 technically in operation—practically half. Only one of these profitable lines—the Canton-Samshui—may be called a short line. Of the remaining ten operating lines—one was under construction—seven may be considered short lines, some of them being isolated, others being branches to the profitable trunk lines. In China, as in other countries, short lines in themselves as a rule are not profitable. But as "feeders," they are very valuable to the trunk lines with which they connect. When the larger plans for the development of the Chinese railway system have resulted in through connections for the remaining short lines they will have a similar value, whether or not they themselves show an actual profit.

Only five per cent. of passenger traffic, as measured by passenger kilometres, is above third class. The rate upon this class averages slightly over one cent per passenger kilometre. The first class rate is nearly three times as high.

Freight is divided into seven classes, among which mineral products take the lead with 40 per cent. of the total tons carried. In revenue, agricultural products lead, with a little over one-third of the total. Mineral products and manufactures are next in order in revenue. Service stores compose over one-fourth of the tonnage carried. Average rates vary all the way from one-fifth of a cent per ton kilometre for mineral products on one line to four and one-tenth cents for animal products on another. The average rate for all classes of traffic, all lines, was one and four-tenth cents per ton kilometre.

The average train load was 206 tons. To a certain extent, this is a fictitious average for the reason that in the case of car-load shipments weights are assessed on the basis of the capacity of the car rather than upon the actual amount of the commodity loaded. However so much of the tonnage consists of coal, salt, wheat, barley, rice and similarly heavy commodities, that on the whole there is little difference, between these estimated weights and actual weight.

Some of the significant statistics for the year are as follow:—

	Total	Per kilometre of line.
Investment Assets	$409,523,352	75.225*
Operating Revenue	57,063,000	10.477
Operating Expenses	30,258,532	5.556
Operating Percentage	53	—
Net Operating Revenue	26,804,468	4.921
Surplus after fixed charges	9,671,534	1.841†
Number of Locomotive Kils.	29,334,839	5,386
Number of Train Kils.	20,494,650	3,763
Number of Passenger Originated	25,230,978	4,633
Number of Passenger Kilometres	1,901,524,065	349,160
Average number of Passenger per Passenger train	199	—
Number of Tons of Goods originated	6,729,151	2,720
Number of Ton Kilometres	14,813,791	413,289
Average tons goods per goods train	206	—

* Based on 5,444 kilometres owned.

†Based on 5,253 kilometres underlying. Other computations based upon 5,446 kilometres operated, which include approximately 2 kilometres leased from South Manchurian Railway.

A Moral that Adorns a Tale

Last April a boat was attacked by pirates off the Chekiang coast and a British passenger, the Rev. H. E. C. Graham, was murdered. The facts were duly established at the preliminary inquest and the Chinese Government, when informed of the occurrence, promised to pursue and punish the criminals. Time dragged on, however, and little or nothing appeared to be done. The British Minister, therefore, suggested that it might be well to send a British gunboat to assist the Chinese Naval Authorities in the discharge of their duties. This produced some effect, for it was announced very shortly afterwards that a great pitched battle had taken place between the water police and a band of pirates, in which 44 pirates were stated to have been killed and over 40 to have been captured. Subsequent investigation, however, proved that none of these pirates had any connection whatever with the murder of Dr. Graham. His Majesty's Consul at Ningpo, therefore, proceeded on board H.M.S. *Cadmus* to investigate the matter personally. Within a very short time the British party succeeded in finding on a small island various articles belonging to Dr. Graham which furnished a clue to the real culprit. This proved to be a certain Hsiang, a well-known pirate, who had bought himself off at the hands of the water police at Haimen for the sum of $3,000, and was then employed in their service together with other members of his merry band. But the Consul's difficulties only then began, for the local authorities put every form of obstruction in his way and pressure had to be applied from Peking before a proper trial could be obtained. Finally justice was done, the murderer Hsiang was condemned to death and executed on July 24. No further compensation of any kind was demanded by the British authorities and the Consul and gunboat withdrew from the neighborhood, to the satisfaction of all parties, except the wife of Hsiang, who angrily claimed from the water police the bribe which her husband had paid them but which had not availed to save him from the arm of the law.

There are two morals which the Chinese would do well to draw from this story. The first is that whereas when two German missionaries were killed in Shantung it lead to the seizure of Kiaochow (which was one of the direct causes of the Boxer rising and the misfortunes that fell upon China in consequence), the British, in this case, merely demanded that simple justice should be done. And, secondly, that it was necessary in order to obtain simple justice to make a display of force by sending a gunboat to the scene. If the Chinese wish ever to see the removal of the extra-territorial servitudes under which they labor at present, the first thing they must do is to ensure that Chinese Courts be prompt, just, and incorruptible, in order that foreigners may no longer fear to submit themselves to Chinese jurisdiction and may not have to display force before they can obtain the fulfilment of the law.

Electrical Industry in Japan

According to investigations made by the Japanese Department of Communications, the general condition of the electrical industry in Japan at the end of May, this year, was as follows:

Industry	Enterprises	Capital
Supply of Electricity	600	Y. 364,602,109
Electrical Railways	43	44,047,969
Both the foregoing Combined	48	326,706,691
Total	691	Y. 735,356,769

Compared with the corresponding period of last year, the number of enterprises increased by 42 and the capital by Y.69,970,107. The capacity to generate electricity for constant use has been estimated as follows:

	Already completed	*Not yet completed*
Water Power	420,508 kilowatts	314,516 kilowatts
Steam Power	120,095 ,,	160,475 ,,
Total	1,015,594 kilowatts	

Compared with the corresponding period of last year, there has been an increase of 63,041 kilowatts for water power electricity and 88,199 kilowatts for steam power electricity, in all 151,240 kilowatts.

The following is a list of new enterprises during the month of May:

Newly established	8	283 kilowatts, capital	Y. 424,900
Work Commenced	2	67 ,, ,, ,,	86,000
Newly established Generating Plant	11	3,193 ,,	
Completed Establishment	4	3,623 ,,	

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

Chosen Railway Profits.—It is stated that since the South Manchuria Railway Company took over the management of the Chosen Railways, a few months ago, the profit has amounted to Yen 700,000. The present indications point to no inconsiderable surplus profit being realized before the current fiscal year is over after paying to the Government General of Chosen the stipulated 6 per cent. profit. On August 23 an agreement was signed at Seoul in which the South Manchuria Railway Company agreed to pay to the Government General of Chosen a sum of money corresponding to 6 per cent. of the investment of the Government General, the repairing and other auxiliary work on the Chosen Railways to be undertaken by the South Manchuria Railway Company. The extent of the investment of the Government General of Chosen was put at Yen 51,000,000 at the end of last August. In the present fiscal year outlays for new construction have to be added and the total reached Yen 59,000,000.

Rolling Stock for Manila.—Additional rolling stock for the lines of the Manila Railroad Company, in the form of 200 new freight cars, which have been given priority classification in construction by the federal government authorities, is now being manufactured at Hamorton, Pennsylvania, and will arrive in the Philippines early next year.

S.M.R. and Kirin-Changchun Railway.—The through traffic service between the S.M.R. Lines and the Kirin-Changchun Railway was recently inaugurated. Each goods traffic station on the S.M.R. Lines is open to through traffic. On the Kirin-Changchun Railway, Hsiachiutai, Huapichang, Chiuchan, and Kirin are the through traffic stations. The junction station is Changchun. The timber dealers, in particular, will welcome the opening of the through traffic service.

Supingkai-Chengchiatun Railway.—Mr. Wu-wu, Director of the Supingkai-Chengchiatun Railway, is reported to have remarked that the proposed extension of the railway either to Taonanfu or Kailu is likely to be fixed shortly, but the present appreciation in prices will force the management to put off actual construction work. Mr. J. Fujine, Chief Engineer of the railway, recently returned to Supingkai from his inspecting tour concerning the proposed extension.

New Rolling Stock for S.M.R.—New rolling stock for the S.M.R. Co. during the current fiscal year was ordered from the United States, in the shape of ready-made locomotives and iron parts of goods cars. The first order given comprises 25 locomotives and 500 goods cars, followed with a second consisting of 500 goods cars. The iron parts of the 500 goods cars of the first order are arriving at Dairen and being sent to the railway workshops, Shahokou, to be re-erected. A good number of goods cars are expected to be ready for use by the advent of the new produce season. The locomotives are expected here before the end of this year, and the second order consisting of 500 goods cars about next summer.

MINING

Oriental Iron Manufacturing Co.—A smelting furnace ordered from the United States by the Toyo Seitetsu Kaisha (Oriental Iron Manufacturing Company) arrived at Yokohama last month on the *Alps Maru*. Two more furnaces are expected to arrive at the same port by the middle of September. These furnaces will commence to operate in February or March next.

Siberian Troubles.—A consular report from Nicolaevsk states that the union of miners at Nicolaevsk has passed a resolution that all mines in that part of Siberia will be nationalized. The Soviet, however, says that this resolution applies only to those mines owned by Russians, those owned by foreigners being untouched.

New Coal Seam at Niushsintai.—Mr. J. Tanaka, residing at Dairen, is reported to have struck a new coal seam near Niushsintai Colliery and has already commenced mining under the title of the Telung Kungsu.

Iwate Colliery Company.—Another colliery company is about to be formed in the north-east of Japan, with a view to working a coal-field extending 14,852,000 square yards in Kokonohe-gun, Iwate Prefecture. The annual output is estimated at 200,000 tons.

Segano Colliery Company. — The Segano Tanko Kaisha (Segano Colliery Company), promoted with a capital of one million yen, has been organized. Mr. Hiroshi Abe, former Governor of Tokyo, was elected president.

The Mines in Kwangtung.—The Chinese Minister in Japan reports that Tong Shao-yi has succeeded again in getting loans from Japan on the security of the mines in Kwangtung.

Suan Mine Output.—The milling plants on the Suan Concession, Korea, during the month of July, treated a total of 17,500 tons of ore with a gross production of Yen 252,000. Shipments of high grade ore from the Tong Ahm Mine to the Tul Mi Chung mill are being continued and the developments at Tong Ahm and also the prospects continue to be most satisfactory. During the past month a new high grade orebody has been discovered in the Tul Mi Chung mine which is being energetically developed. This is an entirely new orebody and gives every hope of being of considerable size.

The Director of the Board of Finance of Mukden, having been ordered by the Department of Finance, has issued an instruction to the following effect :—As iron mines have very important relations to military affairs all iron mines are prohibited from being operated by private persons and even those already opened if they are on a rather large scale should be turned over as government owned.

Chinlingchen Iron Mine.—Mr. S. Sakaguchi (Director of the Railway Department of the Tsingtao Civil Government) returned to Tsingtao recently and said the working of the iron mine at Chinlingchen is to be taken up. A railway siding from Chinlingchen Station to the iron mine is to be constructed. The mining plan has been drawn up with the annual outputs estimated at 200,000 tons. The estimated cost for the mining equipment and transportation of output is about Y.1,360,000.

New Iron Works.—The Tokyo Wire Netting Manufacturing Company has organized as its auxiliary concern the Nippon Kokusan Iron Company with a capital of Y.500,000. This new concern will start an iron smelting mill at Yasugi, Shimane prefecture, which can turn out charcoal pigs to the extent of 5,000 tons a year of dust iron found in that prefecture.

New Korean Mining Co.—It was reported in the "Seoul Press" some time ago that the Asano firm of Tokyo, managed by Mr. S. Asano, the well-known multi-millionaire of Tokyo, had drawn up a plan to establish at Chinnampo a big iron foundry. Owing to difficulty in obtaining electricity and some other trouble, however, the firm has since given up the scheme and decided to establish it at Fushiki, a port in Toyama Prefecture. A large part of the material needed for the foundry at Fushiki will be imported from Whanghai Province. To run the factory the firm will establish a mining company called Chosen Tetsuzan Kaisha with a capital of Y.1,560,000, locating its head office at Tokyo and a branch at Chinnampo. The capital of the company has already been paid up, and Mr. T. Asano and three other gentlemen have been nominated directors.

Anshan Chenhsing Mining Co.—Mr. C. Kido (Superintendent of the S.M.R. Co., Geological Section) has complied with the request of the President of the Anshan Chenhsing Mining Co. (under Sino-Japanese joint management) to officiate additionally as Superintendent of the Mining Department of the Company.

Petroleum from Shensi.—The petroleum that is produced in Shensi is now undergoing a process of refining. According to the report sent to the Ministry of Agriculture and Commerce from the Preparation Bureau it is estimated that the oil can be supplied to the northern provinces for experiment in the next autumn and, within 3 years, its use can be extended to the whole country.

Miners Taxed.—The wolfram miners in Lok Chung district have jointly made a report to the Government that they are being forced to pay an extra tax of $3 per picul by the commander of the reinforcements for Hunan and all the mining works have therefore stopped operations.

Floods in South China

Mr. D. S. Williams, Engineer of Canton, makes Suggestions for Prevention Works

The rainy season this year has caused further costly floods in South China, and every succeeding rainy season will pile up losses unless some practical system of flood prevention is adopted. Every section of China calls incessantly, of course, for similar works, and while northern and central areas which are subject to floods have been reported upon by competent authorities and "considered" time and again, only money is needed to put into effect an adequate scheme of conservation. In the South engineers have also looked over the chief offenders among the waterways, and as nothing has yet been done on a proper scale to carry into effect their proposals it will no doubt prove interesting to all concerned in the proper control of recalcitrant streams of the south to refer to remarks which Mr. D. S. Williams, an Engineer on the Yueh-Han Railway, Canton, felt constrained recently to embody in an open letter to Admiral Tan Hsiao-heng and the Chinese press of Kwangtung Province. Mr. Williams, who ought to be fully qualified to express an opinion on the subject, wrote as follows:

In recent years the floods of the West, North and East Rivers have become so frequent and done so much damage as thoroughly to alarm the people and arouse them to action. The great flood of 1915 was followed by an agitation which resulted in the formation of a Board of Conservancy Works for Kwangtung, and in 1916 the Engineer-in-Chief issued an elaborate report on the work done.

Many complaints are, however, heard, to the effect that the recommendations given in that Report are of little value in the matter of flood-regulation, and that no new advice or information, not familiar to the Chinese for centuries, from practical experience, can be found therein. Attention should also be called to certain facts not mentioned in the Report of the Board of Conservancy Works.

On referring to the report, we find, among other things, the following: Under the heading "Conclusions" (Page 77), "Protection. . . cannot be sought by lowering the high water level, by any of the means enumerated under Chapter VI. . . as this would not be justified." "The object can, however, be attained by confining the floods within the present dyke-systems. . . It is noticeable that this agrees so closely with the statement of Mr. v. Heidenstam in his Memorandum of 1915, in which he concludes (P. 92) that "Any successful method. . . must therefore in any case consist. . . in direct protection . . by building. . . a complete dyke system. . . "

Now all of that may be perfectly true, and still fail to give all the truth in the matter: may even hide most of the truth. On page 48 the Report begins a discussion of different projects, as follows:

"(*a*) Closing the Communication between the West and Yangtze River Systems." This is evidently of little or no importance, and benefits to be derived from closing the canals would not balance the resulting disadvantages.

"(*b*) Creating a new Outlet to the Sea." This is, also, evidently out of the question. It is highly improbable that other provinces would appreciate having Kwangtung's floods diverted to their streams, even if the project should prove feasible from an engineering point of view. However, until very complete investigation is made, this method should not be finally rejected.

"(*c*) Circumventing Canals at Ling Yang Gorge." This project can be rejected at once, as any benefits to be derived by one section of the river would be quite balanced by increased flooding of other sections.

"(*d*) Enlargement of the present River-bed." This, as there suggested, is also out of the question at present or in the future, and hardly worthy of consideration.

"(*e*) Storage Reservoirs." This is discussed at length, and rejected for present consideration. As a matter of fact, this method should be, and *must finally* be, adopted *wherever the natural conditions favor it;* and should be begun *now* and be carried on gradually, as will be discussed later.

"(*f*) Afforestation." This is rejected in the report, which says: "As the only, immediate or principal, remedy against floods, afforestation is not to be recommended." Of course not! No engineer would so recommend it *in any case. But,* as a *partial remedy,* to be used in *all favorable situations,* and mainly to *prevent erosion* and consequent siltage, it is most positively to be recommended, in this climate of rapid vegetation-growth, as of first and most urgent importance, as will be shown further on.

"(*g*) Confining the rivers within embankments (dykes)." The Report says, after rejecting all other methods: "The remaining means. . . agrees with the conception of previous generations that an effective system of dykes. . . would give the protection needed against inundation." This is, flatly, not true and never was nor will be true, in China or elsewhere. It shows a complete misconception of the facts governing the problem, and leaves the flooded areas and their inhabitants just where they were before the Conservancy engineers began. The "previous generations" did not approve the system any more than the present generation does. It was forced on them as the only possible system, the lack of organization and of Government support making any other method hopeless. A flood like that of 1915 would top all main dykes, as they exist at present, by several feet. *If the dykes held;* for flood, *after all basins were flooded,* covered the whole area between Canton and Kongmoon, Chingyen and Fatshan, to a depth averaging more than ten Chinese feet, and if we assume the dyked channels as covering one-fifth the total area (this is purposely made excessive), the depth of water in the streams, if held by dykes, would exceed forty Chinese feet, after allowing for extra run-off. This is 8 or 10-ft. more than the height of highest dykes at Samshui and Chingyuen. As a matter of fact, the dykes would (and did) burst soon after the water started to run over the tops, from scour on the inner slopes; and the relief to the main channels thus given would at once lower the flood-level. On page 3 the Report says ". . . had the dykes been unbroken and at a constant elevation of 120.0. . . the water could not have passed over them, as the water level reaches, as its maximum, only 119.95." The falsity of this assumption would be easily apparent to any Chinese farmer. A margin of only 5 c.m. (less than one-seventh of a Chinese foot) exists here, and the water would easily have risen at least 2-ft. more if held by dykes. The breaking of the dykes and the consequent relief of the channels, by emptying the water into the fields, lowered the flood-level more than 2-ft. in a short time, and this level was maintained by subsequent further relief due to breaking of dykes away from the rivers, although the crest of the flood passed later. Thus, it becomes clear that more than 2 Chinese feet (probably 5 or 6 to be safe) must be added to the heights of all main dykes in the Samshui district to hold out a flood that reaches a level equal to that of 1914.

This suggests the matter of cost and methods of dyke improvement. Suppose we wish to increase the height of all main dykes in Canton Delta one Chinese foot. The average height of such dykes is probably 12 Chinese feet, at least, and if built with slopes of 1½ horizontal to 1 vertical (the minimum allowable section) and with a top of 9-ft., they need 45 cubic feet of good hard dirt (preferably clay with sand and gravel), which at $1.50 per ching costs about 70 cents per running foot of dyke. Add charges for taking dirt from fields, sodding, packing, etc., and we get not less than 80 cents per foot of dyke. This is, purposely, a low estimate, including no flood-gate repairs or such work; but it amounts to $1,440 per Chinese *li**. Now, no one at present can say how long the main dykes of Canton delta run, but it is fairly certain that the total would exceed 5,000 *li*. Say it is

4,000 *li*. Then we have a total of $5,766,000, required to increase the height of main dykes only one foot. This, it must be remembered, must all go in at once, as it is useless to raise any part of a dyke-system unless all other parts are similarly raised. So we must spend over five million dollars in a year, to raise the main dykes only one foot above present levels. But this is not by any means the total; for if the dykes in Canton delta are raised, the people in the upper districts must, for self-protection, raise theirs too, and districts like Canton, now having only low dykes or none, must get to work on new dykes or at building up old ones, as protection against the extra water that will be forced down to them on account of the new higher flood-level.

* A *li* is roughly one-third of a mile.

And the Conservancy Board engineer makes no provision for regulating the building up of the river-beds, and consequent increase of flood-levels; so, year after year, the sand collects in the channels, stops entirely some channels, and obstructs navigation at low-water seasons in all channels, and gradually and permanently forces up the maximum flood-level in all parts of the river. Any method of improving flood conditions which ignores the siltage of channels, is sure to fail in the end.

Suggested Remedial Measures

The Conservancy Board engineers offer only one way to remedy the matter. Let us see if there may not be other ways. A close study of flood conditions here, for a period of about fourteen years, during which time two record floods have occurred, convinces me that the problem could be solved in some such way as outlined below.

First.—Repair and upkeep of present dyke-system, much as is suggested in the Conservancy Board's report, but with some differences. The whole system to be, as at present, under the direction of Admiral Tan. Each district to be controlled by an inspector, preferably one of the local gentry of influence, who will be given military rank and title, and have full power in his district, acting under the director. Each basin in the district to be governed by a supervisor, selected from the native farmers, who will take orders from the inspectors and will have military rank and a small salary. The work will be done as laid out and specified by a corps of engineers appointed by the director, all works to be approved by the director before they are begun.

Dykes will be built in ways which will give maximum economy in the places where they are situated. Contrary to statements of the Conservancy engineer's report (P. 67), houses need not be a danger to the safety of dykes, but if properly built may add to their strength. Markets and villages should be encouraged to occupy properly arranged portions of the dykes, as then the people can be in a position to give constant and prompt attendance, and in times of emergencies will be near the danger points. Moreover, by building a light railway track along the tops of main dykes, the communications of the country will be greatly improved, and materials can be quickly transported when needed to repair or build dykes or other works; and the track will form a strong crest for the dyke.

Wherever possible, bamboos should be planted at once along the bases of river-slopes of main dykes, as they will prevent strong currents against the dykes, and their roots will bind the soil so that no current can cut through. The inner slopes should be planted with some grass or bush that cattle cannot eat, but must not be cultivated in any other way, as any loosening of the top-soil is to be strictly prevented.

Spur-dykes may be used in many cases, to force the current to deposit sand against the dykes, and so build them up gradually. This method will add to the strength of all dykes in exposed reaches of the streams, and will cost very little. All main dykes now having full sections (3 horizontal to 1 vertical), may have their heights increased several feet by means of concrete shells, properly placed and filled with sand. This will, in places where clay is difficult to get, be more economical than the earth-fill with full 3 : 1 slopes, and can be built quickly and maintained at very small cost. Other such methods may be employed, but these are sufficient to give some idea of what may be done to improve present methods, at reasonable cost and, principally, by use of Chinese methods, modified to give best results.

Next is the management of the dyke-system. Frequently floods persist at a high level for several weeks, and though the dykes hold out the flood-waters, surface water collects in the basins to such an extent as to drown the crops. Two feet of water over rice for two days will kill it just as thoroughly as twenty feet for the same time. So, during floods, when the surface water has reached a height where the crops are ruined by it, the inspector should at once have the gates opened and let the basin be *fully* flooded. The benefits from this would be: (a) that the flood would be relieved and the run-off accelerated; (b) that the rich mud carried by the flood would be deposited on the fields, to fertilize the soil and raise the ground levels; (c) that the mud would be kept out of the channels, and so not help to extend the delta and raise the river-bed and later flood-levels, as occurs now. To make this possible, some flood-gates that may be opened or closed at any stage of the water must be put in for each basin; but such gates will be of small size and need not cost much, and the benefits to be derived will soon repay their cost.

Moreover, in cases of extremely high floods, when it appears that the dykes may be topped, the inspector may flood one or more basins for the purpose of lowering the flood-level, the land-owners in such flooded basins to receive some compensation for damages, if by this means other basins are saved; and during later floods, basins not flooded must take their turns at being flooded, when necessary. In extreme cases, the director may flood the whole district, to save the dykes and other districts. It will be a great co-operative system, in which every part depends upon and aids all other parts; not the selfish, heedless, each-for-himself confusion that now rules.

Second.—Afforestation or Planting of Eroded Areas.—Immediately following the repair of dykes, the planting of all eroded areas and bare slopes within the water-sheds should be started. For this a small staff of trained men, working under the chief engineer, would be required. Eroded slopes would be attended to first, and covered with certain forms of coarse grasses, which are very hardy and can be easily obtained and started. Later, after erosion has been partly checked, trees will be gradually set out, and all slopes now covered with grass, but treeless, will be planted gradually at the same time. Tree planting, if properly carried out, is very easy and costs little here. Thus, ten thousand young eucalyptus trees, such as we have here, can be planted and given attention for two years at a cost of about $200, or two cents each, allowing ten per cent. loss. They are then poles worth about ten cents each, and need no further care. This is for a first lot. Later plantings will be made from seeds produced here, saving cost of importing seeds; and as the system develops and the men become expert, the cost per tree will be much less. But after the sixth or eighth year, cuttings will be made to thin the groves, and the poles cut will bring a good price in the market, and pay back many times the cost of production, allowing for as much as fifty per cent. loss, which is excessive. As shown above, we may spend five million dollars, at least, to reduce flood-levels in Canton delta alone by one foot. For that sum we can plant 250,000,000 trees. These, planted 8 Chinese feet apart in squares, would cover an area of 4,938 sq. *li;* or a tract 100 *li* long by 49.4 *li* wide. This would stop an immense amount of siltage, and might lower the floods *in time*, by one foot or even more, by preventing filling up of channels by sand-bars.

Any appreciable reduction of flood-levels from such plantings will occur only after fifty or sixty years; but erosion, and the resulting siltage of channels and consequent rising of the flood-levels, will be checked within a much shorter period. The work should be started on a modest scale, but with a proper organization, *at once*, and be carried on steadily to completion. This climate, above all others, favors this method of flood-regulation.

Third.—Reservoirs.—These may be divided into two classes: (a) Storage reservoirs; (b) settling basins. Storage reservoirs are for the purpose of storing water in time of flood, to lower flood-levels; and to hold water for use in seasons of low water. Their effect is quite positive, and wherever natural conditions favor, they should be begun immediately after afforestation is well started. In situations where, by furnishing power or for other reasons, they can be useful immediately, they should be

begun as soon as funds are available. Such works are quite different from the dyke-systems, in that they serve their purpose individually, from the time they are completed, and do not depend upon a system, though they will be controlled as a system when a number of them are ready for use. Thus the reservoir-system may be gradually built up, as funds can be collected; while the whole dyke-system, as shown, must progress uniformly in all its parts at once—or fail.

Settling basins are temporary reservoirs, built cheaply on waste lands or poor agricultural lands, to hold back the water so that sediment is deposited and kept out of the main channels. They are placed only on streams carrying quantities of silt; and after they are filled with deposited sediment the stream is diverted to a side channel, and the land, greatly enriched, is returned to agricultural uses. This process would not be costly here, as dams are of the cheapest type, and, being temporary, can be placed in most advantageous situations; and this filling-process may be repeated as often as may be required. This type of reservoir should be started immediately, and be developed gradually to control siltage in all small streams now throwing sediment into main channels; and should be continued until the streams run clear in times of flood. After that it may be found profitable to put storage-reservoirs in such streams; but no permanent storage-reservoir should be built on a stream that carries sediment, as in such cases the reservoir will gradually fill with deposited mud and will lose its storage capacity.

Fourth.—Improving Channels.—Dredging or any such methods would be very expensive and give only temporary relief; but by the use of spur—or wing-dams—the rivers could be made to scour their own channels. In such ways the flood could be held to its present maximum, at least, by clearing the sandbars away to the sea more rapidly; and the extra depth of water in the channels, thus secured, would put an end to present troubles of navigation at times of low water. Such work would not cost much and should be begun at once where most needed, and be extended gradually to cover all channels.

Straightening some of the lower channels may give great relief in aiding rapidity of run-off. Thus, the broad channel from Samshui and Sainam to Luklao would (and originally did) take the whole flow from the North River, and so prevent flooding of the Canton-Fatshan district, if it were not contracted at Laklao. By straightening and widening (between dykes) the narrow, crooked channel at Luklao, and opening it into the broad channel to the south, the floods could pass off more rapidly, and so would not reach as high level as at present. A few other channels can be treated in a similar manner. But such works can wait until some progress has been made in more urgently needed improvements, as suggested above.

This letter being already too long, further details will be omitted here. The above are presented merely as examples of possible solutions of the flood problem, and to prove that the dyke-system, while of great importance, are not by any means the solution, and never will be. Many other ways to gain control, or partial control, over the floods will appear as the work progresses and studies are made of all details. The cost of such works will necessarily be great, and the government must give full support. But one or two big floods will destroy property of greater total value than the cost of several such systems as here suggested, and again break up the dykes; and then there would be nothing to show for wasted efforts and expense. Whereas a successful system, though it may be very costly and require fifty, or even one hundred, years to perfect, would in the end "stay put", and would cost nothing more in troubles or losses to the people who will be here then.

If the criticism is made that methods suggested above will be, in any case, too costly, it should be remembered that, as already shown, adding one foot to the height of main dykes in Canton delta alone would require at least $5,000,000 (probably three or four times this sum), and will only give *temporary relief;* so that *any means by which the floods could be lowered one foot, would warrant an expenditure of at least $5,000,000.* The whole matter should be investigated on that basis; and properly carried out, this system will give maximum results for the amounts spent, *whatever they may finally be.*

Bank of Taiwan's Semi-Annual Record

The Bank of Taiwan held a semi-annual shareholders' meeting in Tokyo on September 2, at which the condition of business of the bank during the half-year from January 1 until June 30 was reported. The net profit of the bank amounted to Yen 1,497,435.70, the gross profits having been Yen 32,636,326.26 and the gross expense Yen 31,138,790.53. Adding Yen 392,929.88 which was brought forward from the last semi-annual term, the total amount of Yen 1,890,365.61 was disposed of variously, including Yen 1,018,000 for dividend payment to shareholders, and Yen 600,000 for bonuses to officers and employees and other minor items. The dividend amounted to 10 per cent. per annum.

Mr. Tetsutaro Sakurai, the president, reviewed the economic and financial conditions of Formosa, Japan proper and elsewhere where the bank had business dealings as well as the business condition of the bank in a brief statement. In spite of various disquieting elements, such as the American restrictions of trade, rumors of Russo-German separate peace, Japanese intervention, rise of prices, etc., the trade condition of Japan was generally favorable, he said. The excess of exports decreased by Yen 200,000,000 compared with the corresponding period of last year, but there have been increases of charterage of ships, insurance charges, etc., whereby capital became abundant in Japan and investment abroad became lively.

The Formosan trade during the half-year totalled Yen 137,900,000, of which exports to foreign countries and Japan was Yen 84,400,000 and imports Yen 53,400,000. Sugar, camphor, wheat, flour decreased, in exportation, but the importation of rice, iron materials, cotton goods, lumber, oil cakes, leaf tobacco, etc., increased, as compared with the corresponding period of last year, so that there has been an increase in the total trade of Formosa of Yen 300,000. Exports of Oolong tea increased owing to good crop and the increased demand abroad. Exports of coal increased because of the increased demand in China, Hongkong, the Philippines, etc. The investment of the bank during the period under review amounted in all to Yen 122,200,000, which was an increase of Yen 23,400,000.

Railway building, road construction, and other governmental undertakings in Formosa reported progress, whereas new industrial companies for coal mining and chemical works have established there numbering more than 30, the total capitalization amounting to Yen 12,400,000. The bank has assisted in these enterprises.

The bank's note issue increased owing to the economic prosperity of Formosa, and the extra-limit issue has been continued until it became unnecessary when by the new law regarding bank which was promulgated on March 30 the limit of issue guaranteed by the government was increased to Yen 20,000,000. The average amount of notes issued during the period was Yen 31,400,000, an increase of Yen 7,800,000 over the corresponding period of last year.

Mr. Sakurai further on reviewed the trade conditions of Japan with China, which was affected by the rise of price of silver, and also the trade with south sea countries. He also reviewed the condition of exchange transactions which was affected by the violent fluctuations of exchange rates. The Bank of Taiwan had newly opened a branch in Batavia to assist in facilitating exchange transactions in view of the cotton trade with India and of the trade with south sea countries, with which exchanges needed to be adjusted. In this connection, the bank had done much to adjust exchanges with America, England and other countries through the branches in New York, London and other centres. The total amount of exchange transactions of the bank during the period was Yen 808,900,000 in round figure, and increase of Yen 407,200,000 over the corresponding period of last year.

The investments of the bank in foreign countries during the period amounted to a total of Yen 32,800,000, and the bank further making endeavors to facilitate the Japanese enterprises in south sea countries in sugar, rubber, etc.

In short, Mr. Sakurai summed up, the bank has done a prosperous business in spite of various disquieting elements and has shown the result as briefly summarized before.

chung, 1 for Ex-Minister of Agriculture Chang Chien, 1 for General Wang Shih-chen, and 1 for Wang Yi-tang, while two votes were disqualified.

The President-elect is perhaps better known to the average Chinese than any other public man, because he has been gravitating around the top of things for many years. Starting life in Honan as a yamên secretary he eventually passed the necessary examination in Peking to qualify him as a member of the old "Forest of Pencils," the Hanlin Academy, a distinction of great value in China even in these days. He became associated with the late Yuan Shih-kai when the latter was building up a modern army, and was appointed Co-Director of the Army Training Department. This brought him into intimate touch with the principal military men who happen to be exercising power to-day. They were then all young men, and studied and grew up together until they were given prominent rank under Yuan Shih-kai. The President-elect was made Vice-President of the Board of Army, but was transferred from the military sphere to the administrative when the Manchus began to prepare to permit the establishment of a so-called constitutional government. Mr. Hsu was then made President of the Board of Civil Affairs, and was later transferred as Viceroy of Manchuria. With the downfall of Yuan Shih-kai following the death of the Emperor Kuang Hsü, he became Minister of Communications, and later on Guardian of the Emperor. The overthrow of the Manchus compelled his retirement and he went to live at Tsingtao till 1914, when Yuan Shih-kai persuaded him to become Secretary of State. The monarchical effort fostered by Yuan Shih-kai caused Mr. Hsu once more to seek retirement and he only came into public life again when Yuan abandoned his monarchical ambitions, though he retired once again upon the death of his old patron. His influence was, however, useful in an endeavor to effect adjustments and reconciliations between contending factions. His special qualifications as a bearer of olive branches is responsible, as much as anything else, for his election as President. He is the only high official who can "talk" to the military generals who have made out of a national army a dozen or so of heterogeneous personal forces allegedly owing allegiance to the Central Government but in reality obeying no commands but those which please them. Likewise he is the only Northern statesman who can command the least respect from Southern leaders. He is believed by them to be actuated by good and honest motives, even though his predilection is for the politics espoused by the North. Since agreeing to take up office he has announced that his primary work will be in the direction of settling the internal strife, and only time can tell how he proposes to carry that out.

The South and the Customs

History has seldom provided a better illustration of the variance between what we wish and what we do, than the recent incident in connection with the threat of the Southern Government at Canton to seize the Chinese Maritime Customs organization at that place. The idealism which has been preached for centuries from every pulpit in Europe has been proved impossible under present social conditions by the world war. None could practice that idealism and survive; not because the human heart is antagonistic to goodness but because of the practical difficulties caused by defective environment. This forms the basis of what is written below.

The Southern Government threatened to seize the Canton Customs and to apply its revenue for its own purposes. This has aroused justifiable resentment on the part of the Allies, but is there not something to be said in extenuation? It is inconceivable that men who are fighting against the German idea that might is right should have adopted so high-handed a procedure without reasonable cause. If they now appear to have denied their own principles the denial must surely be more apparent than real.

In the minds of any who know China there should not be even a shadow of a fear that the Southern leaders contemplate repudiation of treaties. The history of the first revolution forbids the suggestion. Nothing less than a very strong conviction of the supreme needs of the moment could have led the young party in Canton to act in a way which they knew beforehand their best friends would regard as improper. They have risked the resentment of those whose good opinion they most value for the sake of the great cause of freedom for which we are all fighting.

They are unfortunately somewhat in the position of the smaller European nations under the domination of Germany. Like them they are fighting against tremendous odds. In men, money and prestige Peking has the advantage. By various means, legal or otherwise; by virtue of its position as the recognized seat of Government, Peking has facilities for obtaining the sinews of war in ways that are absolutely denied to Canton. By loans obtained by devious paths Peking has succeeded very well so far in keeping its military chest replenished, and for what? Directly to fatten military purses, and indirectly to establish a military autocracy. Even in the midst of their bitter strife the Southern leaders have been true to their democratic principles, and, unlike the North, have refrained from undue oppressive measures. To seize the Customs was a confession of inability in this naughty world to act always as we would wish; but when placed against the determination of the North to set up at all costs a military dictatorship, no surprise may be felt that even an experienced diplomat like Dr. Wu Ting-fang has been constrained by the logic of events to assent to a technical breach of international faith. The South has been fighting with clean hands for over a year—fighting for ideals which we all cherish, and there is much to be said for the extreme course it recently threatened to take. The Allies, who, contrary to their wishes, were compelled in this European war to adopt retaliatory measures not in accord with the rules of modern warfare, should sympathise with the awkward situation in which the South now finds itself. Let us ask ourselves what we should do were we in a similar condition. It should be clearly understood that nothing that has been said contains any lurking German notion that the end justifies the means. Good intentions are not furthered by bad actions. The South does not pretend to justify itself but it does plead that extreme necessity, which all friends of the Republic regret, leave the authorities no other alternative.

This is not an act of aggression, such as the invasion of Belgium, which the German Chancellor, Bethmann von Hollweg, while admitting the wrong justified it by saying that military necessity knows no law. Such is not the contention. Rather it is argued that the technical illegality of taking revenue in an unlawful manner by those in authority whose principles are the same as those of the Allies should in the circumstances be condoned.

Whether the threat is carried into execution or not, the Allies should not forget that it is mainly due to the young party in Canton that China is now numbered among Germany's enemies, and that the battle of freedom they are now fighting in this country is the same battle as is being fought in Europe. We trust that the Allies will not lay too much stress on a single incident in a civil war but will keep well before them the real issues at stake between the North and the South. The priest and the Levite may pass by on the other side, but surely in this case the Powers should act the part of the Good Samaritan to the extent of acknowledging that the poor man has at all events the right to defend himself against thieves.

A few days after the above was written we were glad to see a statement published by the Intelligence Bureau of the Southern Military Government denying that any threat had been made to seize the Customs, the Bureau adding that "it is inconceivable that any person would believe such pernicious rumors." While the denial removes the fear, which sympathisers with the Constitutionalists entertained, that the South was "running amok" the sentiments expressed above still stand, and for that reason we have not cancelled the article.

China's Railways and Lumber

The Managing Director of the Peking-Hankow Railway, Dr. C. C. Wang, has outclassed his colleagues by doing something practical towards the creation of forestry areas capable of supplying in the years to come the timber requisite for the railway over which he in this year of grace happens to preside.

Recently he appointed a commission consisting of Messrs. Ngan Han and W. Purdom, from the Ministry of Agriculture and Commerce, and Mr. Tang, of the Peking-Hankow Railway service, to inspect the lands immediately adjacent to the railway with the object of selecting areas for afforestation. These gentlemen carried out their task, selected certain areas, reported on them both as regards soil, climate, and character of trees best suited to the localities and purposes of the railway, and upon their report Dr. Wang has promptly acted.

Afforestation is such an important question in China that the average person can be pardoned for imagining that every Chinese in authority might be bursting with zeal to exert himself to the utmost to make good the devastation wrought through the centuries by the thoughtless hordes of fuel hunters who have scraped most of the mountains and the uncultivable areas clean. As a fact very few Chinese officials give a second thought to the water scarred hills, the silted rivers and the periodical floods that are to be laid solely at the door of fuel gatherers who have been operating for aeons. Or if there seem to be some Chinese who apparently are taking an interest in afforestation and flood prevention to-day it must be explained they have been driven to the task by the very recent floods which almost brought about the complete inundation of the treaty port of Tientsin. Before that threatened catastrophe stirred foreigners to action Chinese were indifferent to the fate of the hills, the rivers, the country, or the people: or rather the average Chinese was indifferent—and callously so.

There was one who appreciated the need of action, however, and that one was Mr. Chow Tze-chi. When he was Minister of Commerce, Agriculture and Industry he formed a Forestry Bureau at the Ministry, engaged the services of experts like Mr. Sherfesee and Mr. Purdom and set to work seriously to try and overtake the devastation annually being wrought by the elements. His ambition was to see country-wide afforestation undertaken, but hardly had he begun the building up of an organization than the political whirligig of China tossed him from office and his successor promptly set to work to undo all that had been so laboriously planned. Nor has anyone since made the slightest effort to resume where Mr. Chow had to leave off. The only steps taken to use the expert services of the organization created with so much trouble, steps that are really worth while that is, are those causing this comment. And while they constitute a great stride forward, they are still little in comparison with what ought to be done.

Apart from a national scheme to create new forests and preserve those still standing in distant places, such as Mr. Chow Tze-chi started to operate, there should be a special service inaugurated with the object of providing in the years to come the lumber needs of all of China's railways, existing and to come. A forestry bureau should be organized by the Ministry of Communications with experts to run it, their business being to select and plant areas and care for them as time goes on. In the matter of ties, or sleepers, alone the railways can absorb all that can be grown. With the small per capita mileage that exists to-day the demand for sleepers, to say nothing of other kinds of lumber, is a great one. What will it be when China acquires the railways she needs? The Shanghai-Hangchow-Nanking Railway can at present use up to 100,000 sleepers per year, and the Peking-Hankow line can take up to 410,000, in addition to piles, posts and general woodwork. It can be estimated from this what the other lines will absorb. And scarcely a decent sleeper can be profitably cut in China. Most of those used have to be imported, the majority from Japan, the price per sleeper being somewhere about $2.50 at this period. The amount of money going out of China on this account alone is enormous, a state of affairs which is nothing short of criminal when the torn and barren hill and mountain sides are remembered. Immense tracts of land which are now lying idle because they cannot be cultivated could be bearing wealth in timber. Experts could soon put them under trees, and since the Government has the service of experts it should employ them in the straightforward necessary work that calls for performance. It is to be hoped that the effort of the Director of the Peking-Hankow Railway will serve as an inspiration and that the Ministry of Communications will lose no time in profiting by it. The Ministry has already been responsible for several innovations of an advantageous nature to the country. It should keep up its record by guaranteeing that posterity will be able to see the railways using timber from their own lands, as well as participate in the joys of the sight and use of wide forests such as the present or the next generation are not likely to observe.

China's Shortage of Railway Cars

What is being done to improve the equipment situation on the Chinese Government railways? During the past winter there was such a demand for wagons that Sino-Foreign concerns were invoking the offices of the foreign legations for assistance in securing even a partial supply against their wants. The price of coal at all outlying points simply soared. Grain lay stacked up under mats at scores of stations. Yet so far as we can find out, not a single car has been added to the supply last year. On top of that, the railway men had the biggest crop to move that China has seen in years. True, this will cut down the movement into the famine districts of last year, but there is a demand for foodstuffs at every port. The rice riots in Japan are an indication of the demand in that near-by market. The Government has a military expedition to feed and supply on the Siberian border. There is a normal increase in traffic of from five to ten per cent. in spite of all political disturbances. And when the war ends—and it looks as if it might end within a period to be counted in months—there will be a settling up and a settling down which will mean a sudden leap in business in China. What is being done to prepare for this?

At the Traffic Conference last July, the Ministry of Communications secured from the several railways acquiescence to a scheme of ownership by the Ministry of a central group of cars to be leased out to the several lines in accordance with their needs, both for local and for through traffic. Of course, it will take some time to frame the regulations for the interchange, the inspection, the repair of such cars. But why wait until those regulations are complete before placing the order for the cars? It will take a year, perhaps more, to build those cars after the order is placed. That will leave abundant time for the drawing up of the needful rules. Apparently the Ministry has made no move whatever to secure the cars for its central group. The concession which it secured from the lines in this particular was a very important step toward the assertion of full control by China over her railways. Any hesitation in exercising the rights obtained to manage a central car supply, merely delays by so much this full control.

There has been considerable doubt whether the cars were to be had. Japan, herself so short of cars that she has had to increase rates, was not in a position to furnish them. The United States was at war. The American Government itself had ordered from manufacturers some 100,000 cars and 1,000 locomotives. What chance was there of getting any cars in America? While this question was being asked Argentine secured several hundred cars. The Philippines have secured preferred rights for an order of several hundred more together with locomotives, and South Manchuria Railway has actually taken delivery of 25 locomotives, and 500 goods wagons and has 500 more on the way. While China has feared to ask, these other interests have actually secured the equipment. Apparently, concerns which have a real need for equipment, and the nerve to ask for it can still purchase it in the United States.

Undoubtedly lack of money is giving the Ministry pause. But that need not be so formidable an obstacle as it seems. The war activities of the United States have widened the outlook of that nation's statesmen very considerably. Appreciating the situation, Argentine was permitted to purchase her equipment on the partial payment plan. A Canadian railway has done the same. Undoubtedly if a whole-hearted effort were made by China she could secure the same terms. In brief, these were something as follow: A small initial payment, say 20 or 30 per cent. is required, and a mortgage upon the equipment itself is taken as security for the remainder of the cost. This plan of financing new purchases of equipment in the States has been in use for a great many years. Locomotive and car builders are used to the method and would be easy to convince of its soundness when applied to

China. Additional payments are made from year to year, so that the equipment actually pays for itself. Judging from the Ministry's report issued for the year 1915, if 500 additional cars were to be put in service now, the additional earnings from such cars would pay for them in three or four years, leaving the remaining sixteen or twenty years of their life as a pure profit on the transaction. The initial payment for 500 cars, say, would probably not be over $500,000. If the Ministry of Communications cannot find that amount of money for so good a project, it should look for a Receiver.

Some difficulty undoubtedly will be experienced in getting space for bringing such cars to China. But the South Manchuria Railway got it. And the tonnage problem will probably improve by the time these cars could be constructed. Certainly we shall not find the United States Shipping Board trying to force the space on to China, but they are not likely to discriminate against China. Why not try?

A Sign of China's National Health

The Ministry of Communications at Peking announces the formation of a Bureau to take charge of through traffic matters. To our way of thinking this is one of the most significant and important steps which any department of the Government has taken for a long time. We will pass over the benefits which are sure to arise from the development of through traffic. Nor will we comment upon the evident wisdom of the Ministry in appointing to the principal positions of responsibility men of proved ability and administrative experience. The good sense exhibited by the foreign staff connected with the lines affected in lending their consent to a movement so vital to China politically as well as commercially may also be dismissed with this brief passing tribute. The most important value which this action possesses is the example which it affords of the way in which progress will be made in China—is being made—despite the apparent continuous strife which exists.

The older Chinese blamed Providence and devils for floods and pestilence. The modern Chinese recognizes these visitations to be the direct results of misdeeds on the part of the people, such as indiscriminate cutting of timber, neglect of dykes and unsanitary practices. But the modern Chinese blames the Government officials for all the ills of his country with much the same abandon as his father blamed *feng-shui*. This practice is scarcely one step in advance of the old superstition. As an example of this besetting sin, a recent number of a scholarly publication contains an article by a leading younger Chinese who quotes Mencius to the effect that "If the monarch be benevolent, none will be otherwise"; and the rebuke Confucius gave Ki Kang-tse concerning *hunghutse*, saying, "Were it not that you made them so, no inducement whatever can make them rob." This is a vicious idea. It is the self-deceiving excuse of the lazy citizen for his failure to act the part of a man in his allotted place.

The work of the Chinese Government or of any other government is not done by the few men whose names appear as members of the Cabinet or in other high positions. At best such men can never be responsible for more than a few decisions on matters of policy and for the co-ordination of departments. The real work of government is done by the thousands of obscure clerks and bureau chiefs. If specifications for materials are drawn properly it is because individuals have taken pains to find out just what is wanted and have gone through the drudgery of learning the precise expression for these wants. If materials conform to specifications it is because the individual inspectors first took the pains to know their job, then actually inspect the material, and finally refuse temptations to overlook inferior stuff. If three men are paid to do the work of one man it is because three individuals give the government short weight on work, a fourth fails to supervise them, and a fifth fails to scrutinize the accounts. Safeguarding public funds is an individual responsibility at every step. If reports are reliable it is because the investigators are diligent and the tabulators are accurate. If reports are timely, it is because the individuals who make them are prompt. If China misses every opportunity to better her relative condition offered to her in this great war, it is largely because the men in the lower grades of service who come into actual contact with the basic facts of production, trade, finance, communication, national defence have dawdled at their work, have no vision, and have no program to present to their superiors. We hold no brief for the Chinese Government official. But neither in China nor anywhere else do the great ideas of progress originate at the top. The impulse, the motive force, comes from below. Rarely does the "Great man" ever do more than help or hinder or shape a little the inevitable event.

Of all the wonderful things connected with this war, probably none seems more remarkable than the sudden transformation of America from an aggregation of a hundred million, dollar-chasing pacifists into a war unit able to put a million and a half of splendid fighting men into a field three thousand miles away within a period of a year and a half. Yet for the past century the American cabinet has had a composition as kaleidoscopic, almost, as the Chinese. "To the victors belong the spoils" was the motto. And there was a political battle—an election—every four years or less. Every change in administration meant a re-distribution of the "plums." Only a generation ago, a President was murdered because no "plum" fell into an expectant hat. But the new appointees always had to retain some of the experienced underlings to protect them from their own incompetence. The underlings were the only men who knew. Some of them had vision. Some of them made plans. And the new chief rarely could do little with such intelligent resolution other than to "sign here." Some of the underlings did not have vision. They had "pull." Only ten years ago the remnants of them were still putting away their work at four o'clock and holding their hands in idleness for half-an-hour in silent protest against an order four years old extending the working day to 4.30 p.m. But on a cold, cold day about then, the Civil Service idea became strong and bold. The men with "pulls" sank and the men with push rose. The Yankees are "Over There" to-day in forces large enough and strong enough to give civilization hope, not because Presidents and Cabinets have been wise and honest, but because bureau clerks by individual conscientious work gradually forced the building up of thorough, effective administrative organization.

This new Through Traffic Bureau is a section of the same stock. It is the conception and workmanship of men busy in the details of everyday work in the Chinese railway administration. Some of them have cherished an ideal for years. They have dared to hope that some day there will be a Chinese railway system in contrast to a number of Chinese railways. They have had to be patient. One step was taken when accounting classifications were made uniform. The Through Traffic Bureau is another step. May this good example stimulate emulation!

The Wireless Telephone Agreement

So far as we can learn the Japanese Government has not yet followed the suggestions of some of the Japanese newspapers that a protest be lodged against the contract concluded on August 24 between the Marconi Company and the Chinese Government for the supply of two hundred wireless telephone installations. These telephones have a range of forty miles and are to be used by the military. In connection with the contract a loan of £600,000 was made to the Peking Government, half of which was to be devoted to the purchase of the instruments and the other half to be disposed of as the Government desired. Certain Japanese publicists took umbrage at the contract on the grounds that it conflicted with the wireless agreement made between China and Japan some time ago. The actual scope of that agreement is unknown to the public, and it is explained that the Marconi contract was put through to draw the badger. If this is so there may be justification for what otherwise must be regarded as a questionable deal at this period. No one ought to lend uncontrolled money to the public, and it is explained that the Marconi contract was put through to draw the badger. If this is so there may be justification for what otherwise must be regarded as a questionable deal at this period. No one ought to lend uncontrolled money to the Peking Government as it has been constituted of late, and even if other nationals have been doing so there is no reason why the British, whose standing is high in China, should follow suit. A well-informed correspondent stated the case as follows, and there is every reason to believe that his interpretation

10. The company's business manager and the accountant of the head office shall both be appointed by the general manager, but the general manager may also act as manager of the head office.
11. The branch offices of the company shall have managers appointed by the general manager. The agents shall also be appointed by the general manager.
12. The company shall hold an annual meeting of shareholders, to elect directors and inspectors and to receive the report of the general manager on the accounts and on the condition of business.
13. After the organization of the general meeting those responsible for it shall turn over all business to the directors of the company and to the general manager and shall apply to the Ministry of Agriculture and Commerce for registration.
14. These Regulations shall be in force from date of publication.

Ningsiang Mining Company

A new coal mining company with a capital of $4,000,000 is now being organized under the auspices of General Chang Chin-yao, the Tuchun of Hunan. This company will undertake the development of the coal fields of Ningsiang and Tsingchi of Hunan. A portion of the capital has been paid in and will be devoted to prospecting and the purchase of land. A petition of the company applying for registration and permission to prospect and develop the coal fields reached Peking last month.

It has been known for some time that the districts of Ningsiang and Tsingchi are very rich in coal deposits, and the natives of those places use antiquated methods to extract coal from the earth. Especially rich is the tract at Shang-ssu-lin, or Double Lion Ridge, covering an area of 30 square li. These coal fields produce excellent anthracite coal which is said to be unsurpassed in the Yangtse Valley. In promoting the new company General Chang Chin-yao gave three reasons, namely, (1) to avoid complications and disputes among the gentry in connection with the question of granting mining concessions to foreigners; (2) the employment of miners will give a livelihood to thousands of poverty-stricken people who suffered so acutely from the fighting in Hunan; (3) the mining tax will furnish a substantial income to the State coffers.

The Ningsiang Mining Company is a joint official and mercantile concern, so it is not necessary to go through certain formalities before starting work such as the submission of maps, plans, the investigation by Peking deputies, etc. General Chang Chin-yao pointed out that the work is urgent and must be carried out quickly. On receipt of the company's petition, the Ministry of Agriculture forthwith wired to General Chang saying that the company may go ahead at once.

The capital of the company amounting to $4,000,000 is alloted as follows:—Forty per cent. is subscribed by the Yu-Siang Bank (Hunan Provincial Bank) which amounts to $1,600,000. The Yu-Siang Bank should pay one-twentieth or $80,000 at once as the first instalment of its allotted share. The balance of the capital amounting to $2,400,000 is to be borne by the merchants of Changsha and other cities.

The promoters elected Mr. Chu Tsu-yin, Councillor of the Tuchun's Yamên, as Representative of the Company, and several deputies have been appointed to purchase the land which is necessary to the mining enterprise. The company has invoked the assistance of the Financial Bureau in the purchase of land. Illicit mining is to be rigidly prohibited and private-owned estates in the mining district are to be bought over.

Proposed Branch to Pukow Railway

Last year the merchants of Chinkiang and Yangchow petitioned the Ministry of Communications to extend the Pukow-Sinyang Railway to Kwachow, which is near Yangchow and opposite Chinkiang. It is proposed that the extension should be effected by building a line from Wuyi, on the Tientsin-Pukow Railway, to Kwachow, a distance of some 60 odd miles. It will be remembered that during the last years of the Tsing Dynasty, the Chinkiang merchants fought against the Nanking merchants and wanted the southern terminus of the Tientsin-Pukow Railway to be placed at Kwachow instead of at Pukow and to call it the Tientsin-Chinkiang Railway, but in the end the Nanking merchants won and the southern terminus was placed at Pukow. Their failure is still fresh in the memory of the Chinkiang merchants so they are pushing their new proposal to secure rail connection with unusual energy, and at last they have got the Ministry of Communications to sanction their proposal. Owing to the impossibility of securing necessary funds for the work no progress is being made with the Pukow-Sinyang Railway, and seeing that the Government is unable to do anything at the present moment with their project the Chambers of Commerce of Yangchow and Chinkiang have decided to raise the necessary funds themselves and start the building of the connecting line at once. The two Chambers of Commerce are now planning the issue of debenture bonds to secure the capital. Kwachow, Yangchow and Chinkiang are important trading centres through which the abundant products of the Eastern Kiangpei must pass, and it is believed that as soon as rail connection is completed which will make these three cities accessible to the Tientsin-Pukow line, and the Pukow-Sinyang line, the trade development of these localities will be materially quickened.

Railway to Chimney Mountain

The Peking-Suiyuan Railway Administration is contemplating the construction of a branch line from Hsuanhuafu to Yentungshan, or Chimney Mountain, which is reported to be rich in coal and iron ores. In a memorandum to the Ministry of Communications, the Administration states that the Government sometime ago proposed to develop the iron and coal mines of Yentungshan, but to ensure success, transportation facilities should be the foremost consideration. A branch line connecting Yentungshan with the Peking-Suiyuan Railway can be easily built and this branch line would also be of use to other mines in the region. The Ministry of Communications has approved the project and surveying parties have been sent out to survey the route. The Peking-Suiyuan Administration has also sent deputies to arrange for the purchase of land for the branch line. The land will be bought according to the land-purchase regulations of the Peking-Suiyuan Railway. The construction work on this branch line will begin as soon as the land is bought. The first railway station will be situated at Houchiamiao, of Hsuanhua.

On September 25 the wireless station at Lyons, France, made connection with the Station at Koukaza, Shanghai, a distance of 11,000 kilometres, and as a result the Shanghai newspapers were able to publish additional war telegrams. The Koukaza station is the only one in China capable of speaking to Lyons or receiving therefrom. Lyons station sends a signal of 15,000 metre wave length, and it is expected that regular messages will shortly be received at Shanghai. They will be despatched from Lyons at 22 o'clock.

Just as we go to press reports come from Aigun that Japanese troops maltreated Russian and Chinese Customs inspectors who attempted to search a ship, and later when Mr. Mansfield, the Deputy Commissioner, visited the ship to investigate the matter, he also was assaulted. The Customs Commissioner protested and informed the Japanese Consul that it would be impossible to pass Japanese goods through the Customs unless the staff is properly protected against interference. This is the kind of thing which brings Japanese into disrepute in China, and perpetuates bitter feelings.

Some time ago the Diplomatic Corp at Peking sent a vote to the Wai Chiao Pu requesting that Wanhsien of Szechuan be opened as a Treaty Port. The Wai Chiao Pu replied to the Note refusing to open the place on the ground that a stipulation is made in Art. 8 of the Sino-British Protocol of the 28th year of Kuang Hsü to the effect that no demand should be made for the opening up of Wanhsien before the carrying out of the scheme to abolish likin and raise the customs tariff. Another reason put forward is that Wanhsien is doing very well since the establishment of a branch customs office there and that there is no necessity to open it as treaty port.

The Fifth Department of the Board of General Staff, generally known as the Mapping Bureau, is the biggest mapping office in China. Every month this Bureau supplies large quantities of maps of the provinces of China to the government offices and the armies. This Bureau sends out a large number of surveyors who are incessantly at work in surveying the provinces, and a staff of skilled draughtsmen are engaged in drawing the maps, which are printed under expert supervision. The Chief of the Mapping Bureau is planning to instal additional plant for the making of electro-plates for printing the maps and an appropriation of $50,000 has been obtained from the Ministry of Finance for the purpose.

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

Tramcar Scheme for Pootung.—Mr. Chen, an Anhui millionaire merchant, is preparing a scheme to introduce a tramcar service in Pootung, the Chinese town on the Whangpoo River directly opposite Shanghai, with a capital of $10.000,000. He has noticed the increasing prosperity of the three tramcar companies in Shanghai, and in his opinion a tram service in Pootung would give a handsome return on the outlay. Mr. Chen has chosen Tungkadoo as the place suitable for the installation of the main power station and plant. Of course there will be branch lines intersecting the trunk line from Tungkadoo to Chuansha, and, wherever necessary, smaller power stations will be established, so that as many of the interior villages in Pootung as possible will be connected with the service. The capital is said to have been almost wholly subscribed. The plant and machinery is to be purchased in America. Mr. Chou, who was formerly connected with the Chinese Tramway Co. of Nantao, has been engaged as Chief Engineer of the proposed company, and he will undertake to direct the purchasing of land, the building of the tram line, and other incidental matters.

Light Railways for Mukden.—General Chang Tso-ling, the newly appointed High Commissioner of the Three Eastern Provinces, proposes to build a light railway in the city of Mukden. A light railway company has been organized under his auspices to be known as the Tung-Yi Light Railway Company and the necessary capital has been raised. The company has submitted its regulations to the Ministry of Agriculture and Commerce for approval.

Wuchang-Changsha Railway.—Because of the fighting between the North and South, the Wuchang-Changsha Railway, ever since its completion, has been solely used for the transportation of troops and military supplies. The Ministry of Communications has made great efforts to open the railway to the general public, and has succeeded in arranging to run a daily through train between Wuchang and Changsha as from September 16.

Shihpingkai-Chengchiatun Railway. — Although traffic on the Shihpingkai-Chengchiatun line was opened some time ago, the formal opening ceremony was postponed. In accordance with arrangements made by Director Yu with the Ministry of Communications, the opening ceremony was held on September 15. Five hundred Chinese and foreign guests were present on the occasion.

Tatung Branch Railway. — The Peking-Suiyuan Railway Administration announces that the Tatung Branch Railway has been completed and construction trains are scheduled to run daily, beginning on October 1. There are three stations on this branch line, namely, Tatung, Pingwang and Koachuan. A third class passenger car and goods cars are to be attached to each construction train. The Tatung Branch Railway was built under the supervision of Mr. Chen Hsi-lin, Chief Engineer of the Peking-Suiyuan Railway.

Peking-Suiyuan Line.—The operating revenues of the Peking-Suiyuan Line for July this year compared with the corresponding period of the previous year again show a remarkable increase. Traffic on this Line increases steadily. The following table shows comparative figures :

	Revenue for July.	Revenue for period January to July.
1918 ...	270,181	2,401,483
1917 ...	185,771	1,967,320
Increase ...	84,410	434,163

Shanghai Tramways.—The following is the Traffic Return of the Shanghai Tramways (Foreign Settlement) for the month of August, 1918, and for eight months ended 31st August, 1918, with figures for the corresponding periods last year :—

	Aug., 1918.
Gross Receipts...	$143,968.56
Loss by currency depreciation	33,487.85
Effective Receipts ... ... Mex.	$110,480.71
Percentage of loss by currency depreciation	24.44
Car Miles run	353,820
Passengers Carried	6,622,983
	Aug., 1917.
Gross Receipts...	$130,421.08
Loss by currency depreciation	29,087.05
Effective Receipts ... ... Mex.	$101,334.03
Percentage of loss by currency depreciation	23.58
Car Miles run	332,528
Passengers Carried	6,040,171
	8 Months ended 31st Aug., 1918.
Gross Receipts	$1,101,441.51
Loss by currency depreciation	246,664.98
Effective Receipts ... ... Mex.	$854,776.53
Percentage of loss by currency depreciation	23.68
Car Miles run	2,715,059
Passengers Carried	50,240,851
	8 Months ended 31st
Gross Receipts	$1,048,762.66
Loss by currency depreciation	233,403.01
Effective Receipts ... ... Mex.	$815,359.65
Percentage of loss by currency depreciation	23.57
Car Miles run	2,696,116
Passengers Carried	47,618,085

MINING

Mining in South Manchuria.—New mining activities in South Manchuria stated to be quite noteworthy on account of their scale and the output. Near the old battlefield of Tashihchiao a big magnesite vein has been struck by Japanese prospectors and for its exploitation a company with a capital of 3,000,000 is being floated.

In this new undertaking many big business firms are interested and with their backing the new company can start a mill near Tokyo and a factory at Dairen where magnesite worked can be employed in turning out Portland cement, fire-proof brick, and other articles. This vein is one of the best in the world in respect of the quality and quantity of ore obtained.

The enterprise to work the iron mine at Anshantien is being actively pushed on. A smelting mill is now under construction and until October this year at least one furnace will be ready for operation. Another iron vein covering 15 miles is located near Anshantien. The ore prospected at this new mine has contained a small percentage of pure iron so far but it is hoped that on lower strata better ore containing above 60 per cent., of iron will be found.

Korean Graphite Refinery.—It has been decided to erect a graphite refinery at Pyengyang, and the building will be commenced before long. The firm responsible for this undertaking has been engaged in mining for graphite at Teishu. It is said that the work will be on a small scale at first, but that the future of the industry is promising.

Copper near Paotingfu.—The Magistrate of Wan-so-hsien, Paoting, reports to the Ministry of Agriculture that traces of copper and lead ores have been found at a place in his district called Hanyangpo. The Ministry of Agriculture has appointed a technical expert of the mining department to proceed to Hanyangpo and do prospecting work.

Kailan Mining Administration. — Recent weekly total output and sales from the Administration's mines were as follows :—

	Output (tons)	Sales (tons)
Week ending Aug. 24	60,988	53,230
,, Aug. 31	59,523	58,243
,, Sept. 7	59,663	52,166
,, Sept. 14... ...	66,552	53,600

Seoul Mining Co.—During the month of August there was milled on the Suan Concession a total of 20,550 tons of ore, from which was produced a gross recovery of Yen 290,626.82.

Encouraging prospects have been met with at the granite-limestone contact in the lower workings of the South mine at Tulmichung. The new orebody, on No. 6 Level; the discovery of which was mentioned last month, continues to develop satisfactorily.

Mining Permits.—The Ministry of Agriculture and Commerce, Peking, has just published its report of mining permits issued during the month of August last. It shows that the Ministry issued prospecting and developing permits to thirty-one mining companies. Among the mines, there are 1 gold mine (at Kuantienhsien, Fengtien) : 3 iron mines (at Tsinglung Mountain, Nanking, Laiyang, Hunan, Yungsin-hsien, Kiangsi) : 2 asbestos mines (at Tsinghsin-hsien and Lai-yuan, Chihli) : 3 manganese mines (at Funing, Chihli, Siangtan, Hunan, Yuhsien, Hunan) : 1 pewter mine (at

New Japanese Railways in Manchuria and Shantung

Chinese Ignore the Chinchow-Aigun Railway Agreement Rights held by America

On October 10 the Industrial Bank of Japan announced the issue of a new loan of Yen 50,000,000 at 5.5 per cent., and discounted at 94.5 per cent., "to cover the new investment made by the bank in China in the form of four railways in Mongolia and Manchuria and two others in Shantung and Kiangsu." The loan was open for subscription between October 19 and 23. The payment of interest and principal is guaranteed by the Japanese Government. According to the official statement, reproduced by the "Japan Advertiser" of October 11, "The proceeds of the loan will be employed in refunding the temporary loan made to the amount of Yen 40,000,000 from the Imperial Treasury and the Bank of Japan for the advance of that amount to China as part of the loans contracted for."

This announcement should set at rest any doubts as to the reasons prompting the signature at this time of agreements which could have waited a more propitious period in the affairs of the world. "The temporary loan to the amount of Yen 40,000,000" was secured, of course, by the military coterie functioning as a "government" at Peking, and in order to obtain that amount of money with which to carry on they would be ready enough to sign any agreement, forgetful, probably, of any other obligations which may or may not attach, and caring very little about them even if they happened to remember. There is an obligation with regard to any railway contemplated between Chinchow, or any point thereabouts, and Aigun, viâ Taonan and Tsitsihar, to which the Chinese Government must sooner or later give attention —and that obligation is with the American Government. If America chooses to exercise its undoubted rights connected with the old Chinchow-Aigun Railway Agreement, which have been reserved, then the Chinese Government will be placed in an embarrassing position *vis-à-vis* both Japan and Russia.

On October 2, 1909, the Viceroy of Manchuria, Hsi Liang, signed a preliminary agreement with American financiers (Messrs. Kuhn, Loeb & Co.) for a loan to construct a railway from Chinchow to Aigun, and on January 21, 1910, the contract was approved by an Imperial Edict. By April, 1910, negotiations with regard to a detailed final agreement were concluded, but signature of the Viceroy was suspended owing to vigorous protests by Japan and Russia against the consummation of the agreement, though the Viceroy confirmed the conditions of the agreement. Briefly stated the protests of Japan and Russia were based on a joint arrangement to denounce the project as "a deep-laid plan for attacking Russian territories in Eastern Siberia and Russia's 'special interests' in Mongolia and Manchuria;" the joint protest lodged with the Chinese Foreign Office against the scheme being based on "considerations of political and strategical expediency."

Without going into the details of the political considerations which weighed at that period; the stir created by the attempted neutralization of Manchurian railways under the scheme of Mr. Knox, the American Secretary of State, etc., it may be stated that the American Government at that time decided to allow the agreement to remain in abeyance. The objection to the proposal most emphasized on that occasion by Japanese publicists was that the projected railway would parallel the South Manchuria line and, therefore, was not necessary. Whether that argument was a good one or not, or was merely in accord with the common Japanese expression, *yumei mujitsu* (nominally so; but not really so), need not be discussed in view of the fact that the Japanese have now secured from China an agreement permitting them to build a line over what would have been the southern section of the railway originally condemned.

On October 5, 1913, the following agreement in the shape of a letter was secured by the Japanese Legation, and upon this the Shihpingkai agreement, and the recent final agreement calling for the loan mentioned at the opening of this article were based:

SIR,—The question of Chinese railway loans has often been raised by you and discussed many times. A plan has now been decided upon, which is communicated to you herewith:

General Provisional Railway Loan Agreement.

(1) The Government of the Chinese Republic agrees to make a loan from Japanese capitalists for the construction of the following railways:
   (*a*) From Shihpingkai, viâ Chengchiatun, to Taonanfu.
   (*b*) From Kaiyuan to Hailungcheng.
   (*c*) From the Changchun station of the Kirin-Changchun Railway, across the South Manchuria Railway line, to Taonanfu.

   The lines referred to above will connect with the South Manchuria Railway and the Peking-Mukden Railway Arrangements therefor will be drawn up separately.

(2) The detailed arrangements in regard to the loans mentioned above will be modelled on the Pukow-Sinyang Railway Loan Agreement. After this general agreement has been drawn up the Chinese Government will, as soon as possible, come to agreements with Japanese capitalists.

(3) The Chinese Government agrees that if in future railways are to be built from the city of Taonanfu to the city of Chengtehfu and from Hailungfu to the city of Kirin, that if it is proposed to borrow foreign capital, negotiations will first be entered into with Japanese capitalists."

When it became known that the above undertaking had been entered into by the Chinese Government the American Legation reminded that Government of the American rights in the Chinchow-Aigun agreement, the stipulations of the agreement with Japan clearly tending to nullify the terms of the American agreement. Oblivious of this argument, and entirely ignoring the claims of America, the Peking Government signed away the northern section of the Chinchow-Aigun project on March 27, 1916, when an agreement* was entered into with the Russo-Asiatic Bank for a loan to build a railway between Tsitsihar and Aigun, with a branch from Mergen to Harbin.

This agreement calls for a loan of Roubles 50,000,000 and any additional amount which might be required to complete the project, the loan to be floated when financial conditions may permit after the war, and in whatever markets the Russo-Asiatic Bank may deem money to be available.

Again the American Legation reminded the Chinese of the Chinchow-Aigun agreement, and again the Chinese Government displayed the abounding friendship it entertains for America and the deep appreciation it feels for what America has done for the country, by ignoring the references for when the Japanese decided that the territory west of the South Manchuria Railway perhaps could stand a little development the Chinese signed the final agreement for the construction of a line from Shihpingkai to Chengchiatun, the first section of the projected line from Shihpingkai to Taonanfu, mentioned as (*a*) in the above agreement. The negotiations were opened in July, 1915, and after about twenty-three formal meetings and many informal ones, the agreement was signed on December 29, 1915. In addition to the formal agreement a supplementary agreement was also signed, while some eighteen written notes were exchanged mutually. The agreement was published by the REVIEW†, but the notes have been kept secret, so what they contain can only be surmised That agreement stipulated for a loan of Yen 5,000,000 at 5 per cent. interest, secured on the railway, and to be used exclusively for the construction of the railway. The financiers were the Yokohama Specie Bank, but though Article 20 stipulates that if

*See FAR EASTERN REVIEW, April, 1916.

†See FAR EASTERN REVIEW, May, 1917, page 472.

foreign money is used for any extension of the line it shall be provided by the Yokohama Specie Bank the new agreement for the extension has been signed by a different group, excluding the Specie Bank, in accordance with the change in arrangements for financing in Manchuria and Mongolia as previously published‡.

In due course construction work was proceeded with and that line—some 53 miles in length—is now in operation, and is reported to be a valuable feeder to the South Manchuria Railway. Notwithstanding the contentions advanced at the time of the proposal to build the Chinchow-Aigun Railway that such a line was not required because the character of the country traversed did not warrant railway connection a different story was told when it was regarded as expedient to push ahead with the system embodied in the above short agreement. It was pointed out that the lines were justified and necessary to open up the neglected lands of Eastern Mongolia, which, from an agricultural point of view included a vast area of arable country already under cultivation and producing "an immense quantity of produce like beans, kaoliang, millet, etc., as well as live stock such as cattle, horses, sheep (hides, skins, hair, etc.) and soda and minerals.

In consequence of this, but undoubtedly inspired principally by the desire for further money to carry on its "war" with the South, the military coterie in Peking, still disregradful of the American intimations on the subject, concluded an agreement at the end of September for loans to construct "four" railways in Manchuria and Mongolia and "two" in Shantung Province—the lines embraced in the loan referred to in the opening paragraph of this article.

The Manchuria-Mongolia Lines

In its official statement given out on October 1 the Imperial Japanese Government announced, according to the "Japan Advertiser," that it had arranged "the following loans with the Chinese Government, prior to the resignation of the Terauchi Cabinet," in addition to one for the establishment of a National Iron Works in China, referred to elsewhere:—

(1) Four railway loans in Manchuria and Mongolia. An agreement was made several years ago between the Imperial and the Chinese Government that the latter would borrow the necessary capital from Japan in case the so-called five railways in Manchuria and Mongolia were to be constructed.

The work on one of these five railways between Shihpingkai and Chengchiatun has been started by the Chinese Government with capital furnished by Japan and the loans for the remaining four railways have been recently agreed upon. These railways are:

(*a*) From Taonan-fu to Jehol.
(*b*) From Changchun to Taonan-fu.
(*c*) From Kirin to Kaiyuan via Hailung.
(*d*) From a point on the Taonanfu-Jehol Railway to a seaport.

These lines total more than one thousand miles altogether costing, it is estimated, about Y150,000,000. The Chinese Government is expected to use a Gold Loan which will be subscribed entirely by the Japanese Bankers' Syndicate. The syndicate will furnish Y20,000,000 to China as an advance loan, forming part of the Gold Loan proper.

(2) The Tsinan-fu and the Kaomi Railway Loans. As a result of the existing desire on the part of the Imperial Government to reach an understanding with the Chinese Government on the question of railways in Shantung Province and repeated discussions between the two governments, the following railway loans have been lately agreed upon:

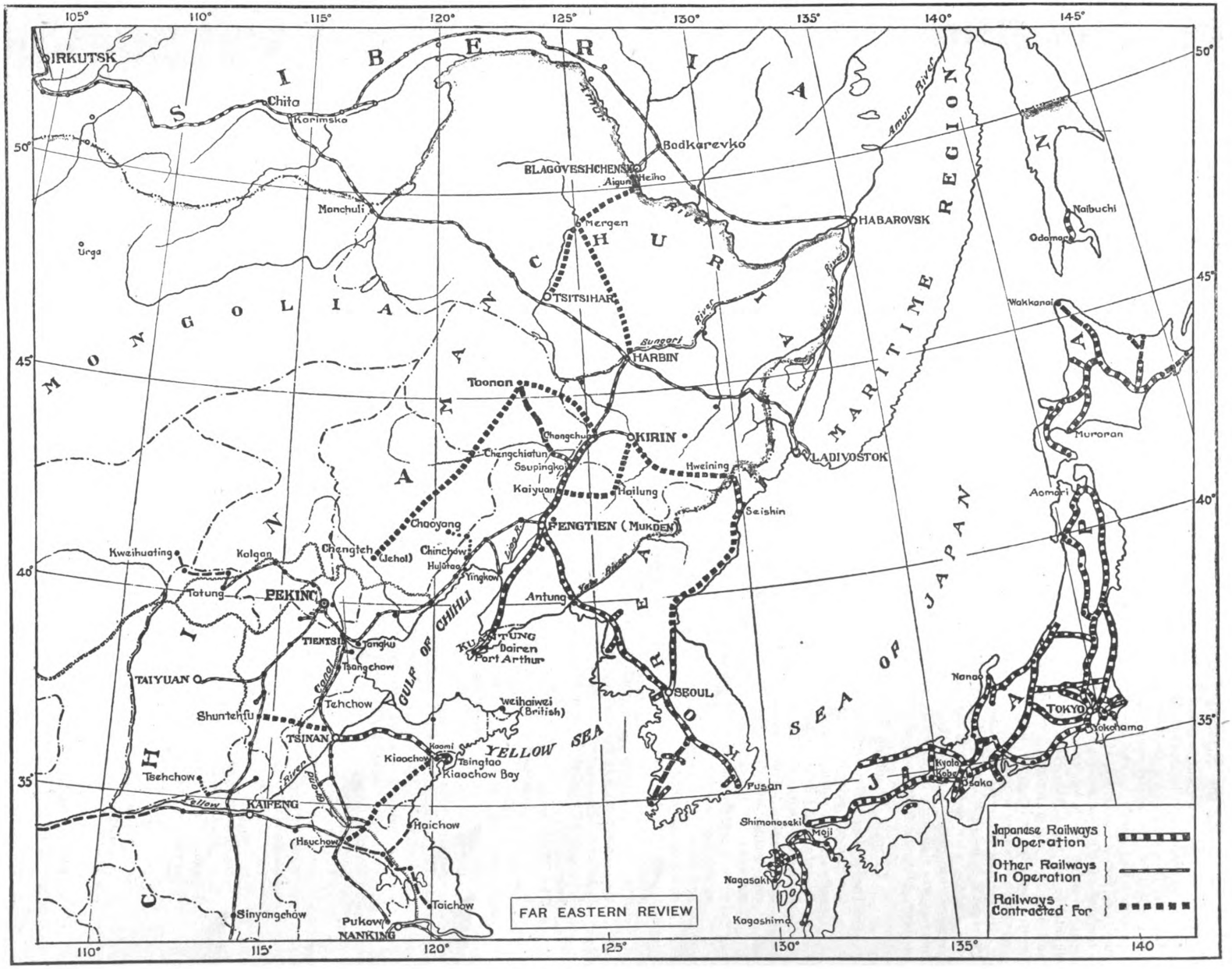
(*a*) From Tsinan-fu, Shantung Province, to Shunteh, Chihli Province.
(*b*) From Kaomi, Shantung Province, to Hsuchow, Kiangsu Province.

The amount of Y20,000,000 will be furnished to the Chinese Government by the Japanese syndicate as an advance loan. In case investigations show that these proposed railways would be unprofitable from a business point of view, different lines will be substituted by agreement of both parties. The proposed lines extend over about 460 miles altogether and will cost about Y70,000,000 which will be raised in a similar manner as the loans for the four railways in Manchuria and Mongolia. The conclusion of this agreement is said to have resulted in a better understanding between the two governments on the future of the railways in Shantung Province.

For the moment we are merely concerned with the lines mentioned for Manchuria and Mongolia, the Shantung projects being dealt with below. It will be seen by reference to the agreement of October 5, 1913, that no mention was made of a railway from "a point on the Taonanfu-Jehol Railway to a seaport," so its inclusion in the recent agreement virtually embraces the territory tapped by the route of the Chinchow-Aigun line as far as from the Gulf of Liaotung to Taonanfu. The map which we publish in connection with this article will repay close study. It shows the lines involved and when it is remembered that the only approachable port worth while on the western shores of the Gulf of Liaotung is the unfinished port of Hulutao,* which is connected with the Peking-Mukden Railway with a branch line at Lienshen just south of Chinchow, it is natural to surmise that this is the seaport which the Japanese have in mind. Hulutao is situated 110 miles north of Chingwantao and is seven and a half miles from the Peking-Mukden Railway, and 13 miles south of Chinchow. Taking Mukden as a centre the distance to Hulutao is 184.16 miles, while from Mukden to Dalny the Japanese port, the distance is 246 7 miles. From Taonanfu to Hulutao is about 290 miles, and, as we pointed out in the FAR EASTERN REVIEW of July, 1914, page 64, (q.v.) when describing Hulutao, the development of local traffic when the Taonanfu Railway is built will bring great quantities of cereal and mineral products to Hulutao for shipment. As a harbor Hulutao has a good natural depth of water—30 feet at low tide—with a rise of eight to ten feet at spring tides. It has the advantage, too, that it seldom freezes sufficiently to prevent steamers operating, observations showing that it is no unusual condition for open water to be at Hulutao when there are six inches of ice at Chingwantao. The Chinese authorities at Mukden began improvement works to develop the port in October 1910, but by the following October lack of funds and the outbreak of the revolution against the Manchus terminated work. In that one year, however, considerable progress had been made with the breakwater, etc., details of which we have previously published. but work was never resumed. It is known that had the Chinese authorities proceeded with the improvement of the port it would, next to Tientsin, have developed into the most important Chinese harbor in North China, and probably would have been a strong competitor with Dalny. Japanese engineers have frequently inspected the port and it has several times been rumored that Japan has had an eye on its future control. It need not then occasion any surprise to hear later on that Japan has made arrangements with the present "government" in Peking to conclude the work and utilize the port as a sea terminal for a line "from a point on the Taonanfu-Jehol Railway." With the port developed and in her control, and lines running therefrom to Eastern Inner Mongolia as planned Japan would be in a strong commercial position so far as Manchuria is concerned, for she would then have direct avenues from Dalny and Hulutao to cover a great territory, the importance of which may be appreciated at a glance by looking at the map.

It will be seen, then, that the territory embraced in the Chinchow-Aigun Railway project is now completely taken up, with the exception of a small strip between Taonanfu and Tsitsihar, the Chinese having granted the southern section to the Japanese and the northern to the Russians, both contracts having been granted without any reference to American claims. The question now is: What explanation will the Chinese make to the American signatories of the agreement of October, 1909? There seems to us to be no other course open than to accord equal mileage for construction elsewhere, and the Chinese ought to do that without waiting to be asked about it if they wish to retain the good-will of America which they profess so strongly to desire—which they endeavor at times of crises freely to make use of—and if they wish to show the appreciation they profess of American altruistic assistance which has so frequently been rendered.

‡See FAR EASTERN REVIEW, September, 1918, page 362.
*See FAR EASTERN REVIEW, July, 1914, page 64, for full description.



MAP OF NORTH CHINA

showing the railways recently contracted for with Japanese financiers, as well as the projected Russian lines.

Re the Shantung Railways

These railway loan contracts enable Japan to consolidate her political and economic hold upon Manchuria and Eastern Inner Mongolia, in accordance with the treaty signed on May 25, 1915, as a result of the conferences connected with the Twenty-one Demands; and similarly she has been able to translate her ambition for a substantial footing in Shantung province into something tangible by securing a contract to construct a railway from a point north of the Yellow River near Tsinanfu to Shuntehfu on the Peking-Hankow Railway in Chihli Province, and a railway from Kaomi, near Tsingtao, to Hsuchowfu, the junction of the railway to Kaifeng, on the Tientsin-Pukow Railway in Kiangsu Province.

By signing contracts for these two railways in Shantung Province it is believed the Chinese accord to the Japanese certain rights which were embodied in an agreement signed with the Germans just prior to the outbreak of war. The preliminary contract was signed on December 31, 1913, and the final agreement in June, 1914, the first being as follows:

German Shantung Railway Agreement

(1) The Chinese Government undertakes to construct a Government railway through Shantung Province. This railway will start from Kaomi, and, passing through Ichowfu and I-hsien, will terminate at Hanchuang, there connecting with the Tientsin-Pukow Railway. If, after the selection of the route, it should be found that engineering difficulties prevent the junction of the two railways in Hanchuang, another place will then be selected for the junction. Immediately after the signing of the loan agreement work will be started on this line and must be continued until entire completion So long as no obstacle arises and there is no delay or default in paying over the loan instalments the work shall on no account be interrupted.

(2) The Chinese Government undertakes to construct a Government railway from Tsinanfu to the Peking-Hankow Railway. This railway will start from Tsinanfu and will terminate at a place between Shuntehfu and Hsinhsiang-hsien.

(3) The following conditions have been agreed upon in regard to the two above-mentioned railway lines:

(*a*) The Chinese Government will entrust the construction work to a German firm. German capital and materials of German make will be utilized, while a German engineer-in-chief will be engaged to supervise the work.

(*b*) The German firm which undertakes the work will be selected by the Chinese Government. The German Government will submit the names of several German firms competent to undertake such work and the Chinese Government will make the selection from among them.

(*c*) The Chinese Government declares that in regard to the construction of these two railways the German Government will be accorded the same terms and conditions as are embodied in the railway loan agreement entered into with the Belgians on September 24, 1912. This means that a German traffic manager, a German engineer-in-chief and a German chief accountant will be engaged. If, after the completion of the construction work, the loan agreement is still operative, these officers will continue their service They should send in their reports on all matters to the Ministry of Communications through Chinese official, as these railways are under the control of the Ministry.

(*d*) The Chinese Government does not wish that the German engineer-in-chief should have the additional work of auditing the expenditure from the loan funds and is willing to engage a German auditor for this work.

(*e*) The Chinese Government declares again to the German Government that if hereafter railway loan agreements are made between the Chinese Government and any other country wherein the terms and conditions concerning the construction and traffic management are more favorable than the terms and conditions mentioned in the foregoing the same privileges will be accorded to these two railways.

(4) The German Government restores to the Chinese Government all the special privileges contained in the preliminary agreement concerning the two railway lines from Chengting to Haichow and from Kaifengfu to Yenchowfu, but it should be distinctly understood that in regard to the line from Kaifengfu to Yenchowfu all the common privileges provided in Article 3 of the Kiaochow Treaty, of March 6, 1898, are to be retained.

(5) After the exchange of despatches concerning the above arrangements the German Government will forward another despatch sanctioning the mining agreement agreed upon in Tsinanfu by the Shantung Government and the Shantung Mining Company of July 12, 1911.

With the exception of the railway already constructed from Kaiochow to Tsinanfu, the German Government will cancel all rights of railway construction provided in Clause 1, Article 2, of the Kiaochow Treaty of March 6, 1898.

I, the German Minister sign this despatch and exchange it with Mr. Sun Pao-chi, the Chinese Minister of Foreign Affairs, for a despatch of the same language and meaning, such exchange to be held as proof of the arrangement aforesaid having been agreed upon by both parties.

(Signed) FREIHERR VON HAXTHAUSEN.

December 31, 1913.

In June, 1914, a final agreement was signed, the contents of which have not been disclosed. Whether the new agreement secured by Japan is based on this instrument we are unable to say, but it can be taken for granted that since cash advances had to be made to the Peking "Government" it is not likely that any privileges have been sacrificed.

The projected railways are of great value in opening up the province and securing connection with adjoining provinces. The line from Kaomi to Hsuchowfu will also tap the important coal deposits being worked at Tierhchwang, and permit of coking coal of high quality being hauled to the iron mines at Chinglinchen now being operated by Japanese capitalists. They will also contribute greatly to the development of Tsingtao as a port, it being Japan's ambition to make this centre one of the chief points of distribution in North China.

Agreement Exchanging Mining Territory

The agreement signed on July 24, 1911, mentioned in the above agreement, has not previously been published, and it becomes of peculiar interest if, as reported, Japan has claimed a 30 *li* radius of mining activity on each side of the new lines, on the grounds that Germans possessed similar rights. The agreement which follows rather alters things. It is as follows:

The Government of Shantung being now in accord regarding the readjustment of the mining rights along the line of the railway, the substance of the agreement with the Shantung Mining Corporation (Schantung-Bergbau-Gesellschaft) is embodied in the following articles:

SECTION 1.

Article 1.—The Shantung Government and the Schantung-Bergbau-Gesellschaft confirm, as originally agreed, that the mines at Fangtze and Tzuchuan, together with those of Chinlingchen and Changtien for the space of 30 *li* wide shall be exclusively operated by the Schangtung-Bergbau-Gesellschaft.

Article 2.—The above specified mining territory of the Schantung-Bergbau-Gesellschaft is defined on a separate map which constitutes an important integral part of this agreement All mining rights within this area belong to the Schantung-Bergbau-Gesellschaft. Chinese mining companies have no rights there.

Article 3.—Outside of the special rights reserved by the Schantung-Bergbau-Gesellschaft as specified above the rights to mines within 30 li of the finished Shantung Railway and of the unfinished Tientsin-Pukow Railway and the recently surveyed Kiaochow-Ichow Railway, which were originally granted by China to the Shantung-Bergbau-Gesellschaft, are hereby cancelled.

Article 4.—The original purpose of the Schantung-Bergbau-Gesellschaft was to preserve the right to operate mines in Poshan and Tzuchuan within the 30 *li* belt. Now in order to display a friendly spirit it is agreed that the rights in Poshanhsien are relinquished: also in Tzuchuan from Takueishan through Lingkouchen towards the northwest, south of the oblique line through the eastern part of Tzuchuanhsien the mining rights are relinquished and restored to China.

Article 5.—The mines of Fangtze within the jurisdiction of Weihsien were formerly included in the 30 *li* belt as well as Changho and Anchinhsien. Now the Schantung-Bergbau-Gesellschaft, in order to show friendship, returns to China its rights to the mines of Poshanhsien. Also the mining rights are returned to China in Tzuchow, south of the diagonal line from Takueishan through Lungkouchen toward the north-west through Tzuchouhsien.

Article 6.—The mining area map agreed upon between the Shantung Government and the Schantung-Bergbau-Gesellschaft is issued in four sheets as follows: (*a*) Mining areas in Tzuchow, Chinlingchen and Changtien; (*b*) Mining areas on the southern boundaries of Tzuchow: (*c*) Mining areas in Weishien and Changlohsien; (*d*) General map.

Article 7.—In Fangtze, under the jurisdiction of Weihsien and in Lo-an and Anchin hsiens, which were included within the 30 *li* belt, although the Gesellschaft, in order to show friendship has turned back to China its rights in the north-west part of Anchinhsien, yet it retains its rights in Changlohsien and Tachingshan to a distance of ten Chinese *li* from Fangtze.

SECTION 2.

Article 1.—Along the line of the Shantung Railway in the regions of Changchin, Tzuchou and Poshanhsien, which have been relinquished by the Gesellschaft, Chinese are forbidden to open mines on a large scale before the year 1920. After that date Chinese officials and merchants may decide for themselves.

Article 2.—Within one month of the exchange of ratifications of this agreement between the Chinese and German Governments the native mines within the railway zone shall be closed.

Article 3.—According to the mining regulations of the 26th March of Kuang Hsü, that is A.D. 1900, the mining operations of the Schantung-Bergbau-Gesellschaft shall be specially protected.

Article 4.—If the Chinese Government, or Chinese merchants wish to carry on mining operations in the areas relinquished by the Gesellschaft according to this agreement, whenever the capital is insufficient they must borrow German capital. If they require supplies of machinery they must purchase German materials, and if they wish to engage foreign experts they must engage Germans.

Section 3.—China undertakes to pay Mex. $210,000 to be expended by the Schantung-Bergbau-Gesellschaft in surveying and purchasing land and in meeting other necessary expenses. Within one year after the signing of this agreement this shall be paid in two instalments. As soon as possible after the signing of this agreement the Schantung-Bergbau-Gesellschaft shall make a full report to China regarding its surveys and purchases of land with maps and observations.

SECTION 4.

In operating iron mines near Chinlingchen the mining regulations of the 26th year of Kuang Hsü (A.D. 1900) must be conformed to without evasion. It is, further, the expectation of the Chinese officials that an iron works shall be opened near these mines, the capital of which shall be subscribed by China and Germany jointly. It is stipulated that the call on Chinese for capital shall be limited to about $500,000. The detailed regulations will be drawn up when the ironworks are to be opened.

This agreement is drawn up in both the Chinese and the German languages, both versions to agree in meaning, in four copies, to each is attached four sheets of mining territory maps. The deputies of the two nations will mutually exchange the original copies with the supplementary sheets as proofs of this agreement, which both are to observe.

Dated at Tsinanfu July 24, 1911, or Hsuantung, 6th moon, 29th day.

Signed HSIEN YING-PENG, Industrial Taotai of Fengtien.
YU TSE-TA, Financial Commissioner of Shantung.
AI-MU-LO-LIN-HAI-ERH (Chinese name), Managing Director of Schantung-Berghau-Gesellschaft.
PEI-CHIH-CHIH (Chinese name), German Consul at Tsinanfu.

It must be explained that by a decree of the German Chancellor dated March 13, 1913, the Schantung-Bergbau-Gesellschaft was liquidated and the mining concessions were transferred to the Schantung-Eisenbahn-Gesellschaft Railway Company. The latter Company, therefore, would have operated under this agreement, which liquidates on the basis of the concession of particular areas the broad general right to mining privileges along the railways.

It is difficult to comment upon the advantages or disadvantages of the agreement signed with regard to Shantung because we are ignorant of the terms of the document. Considering that the Allies are supposedly fighting for the abolition of secret diplomacy, among other things, it would seem to be policy on the part of Japan to publish the full terms at the earliest moment. This is desirable in the first place to dispel wrong conclusions, and in the second to allow others interested in the development of China to know where they stand. The construction of railways in China should benefit everyone interested in commerce and trade, and we feel sure that no one will object to the opening up of Shantung by Japan if she proceeds with the work conscious of the requirements of the "open door" policy. It is feared in quarters that she may apply in China Proper the "rules and regulations" designed for Manchuria, but suspicions in this regard can immediately be swept away by the Hara Government if it so desires. In Japan's best interests it is to be hoped that the new Cabinet will take the earliest steps to clear the atmosphere by publishing all the agreements recently come to in China and so lay before all interested parties the exact terms upon which Japan is operating. Such a step will allay the fears generating in the minds of Chinese and satisfy all foreign interests.

Engineering Congress in Java

The Committee of the General Engineering Congress to be held at Batavia, Java, in 1919, has issued its first circular outlining the purposes of the Congress. It is proposed to invite attendance of engineers principally from the countries in the region of the Dutch East Indies where foreign and highly specialized technical science is practised in relatively undeveloped surroundings. As the Dutch East Indies is in this category, it is believed that the central position of Java and the many interesting engineering works there will make that country especially suitable for the proposed convention.

The Committee says that the War has brought the countries outside of Europe closer together and made them dependent upon each other, and in technical respects especially these circumstances have brought about new problems which must be solved with greater skill and ability. For instance, the development of harbors and transportation facilities in such countries is a new problem which calls for the exchange of experiences and opinions.

At present it is proposed to divide the Congress into six sections:

Harbors and means of communication.
Irrigation, drainage, waterworks, etc.
Roads and bridges, townplanning, architecture, etc.
Production of energy, electricity and industries.
Mining and geology.
Other subjects not included in the foregoing.

Invitations for attendance will be extended as well to Western America, Japan, Australia and South Africa, and technical papers will be invited from many other sources. The languages allowed will be Dutch and English. M. H. Damme is the President and C. Tellegen the Secretary of the Committee of Management, whose address is 4 Palmenlaan Gondangdia, Batavia.

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

S.M.R. Traffic Returns.—The S.M.R. Traffic Returns for August, 1918, give the daily average of Y.80,646.71, being an increase by Y.19,664.44 on the corresponding month of last year.

Japanese Railway Revenues.—The gross receipts of Japanese railways for the first half of the present fiscal year, April 1 to September 30, according to an investigation of the Imperial Railway Board, amounted to Yen 110,135,025. A total of 140,466,680 passengers were carried, yielding Yen 58,996,370; an increase of 24,064,249 passengers and Yen 16,911,318 compared with the corresponding period of last year; and an increase of Yen 13,266,328 compared with the budget estimate of receipts. A total of 24,548,800 tons of freight was handled, yielding Yen 51,138,655; an increase over last year of 2,585,054 tons of freight, and Yen 8,688,096; which is an increase over the budget estimate of Yen 7,092,205. In the total there is an increase over the corresponding period of last year by Yen 25,406,414, and an increase over the budget estimate by Yen 2,358,533.

Shanghai Tramways.—The following is the Traffic Return of the Shanghai Tramways (Foreign Settlement) for the month of September, 1918, and for 9 months ended 30th September, 1918 :—

	September, 1918.
Gross Receipts	$156,872.48
Loss by currency depreciation	36,658.79
Effective Receipts	Mex. $120,213.69
Percentage of loss by currency depreciation ...	24.53
Car Miles run	347,940
Passengers Carried	7,254,206
	9 Months ended 30th September, 1918.
Gross Receipts	$1,258,313.99
Loss by currency depreciation	283,323.77
Effective Receipts	Mex. $974,990.22
Percentage of loss by currency depreciation ...	23.79
Car Miles run	3,062,999
Passengers Carried ...	57,495,057

Peking-Suiyuan Railway.—The latest report just received shows that the operating revenues of the Peking-Suiyuan Line for August this year, when compared with the corresponding period of the previous year, again show a remarkable increase. From this it can be seen that the traffic of this line increases steadily. The following table will show the comparative figures :—

	Revenue for August	Revenue for period January to August
1918 ...	287,069	2,688,552
1917 ...	194,901	2,162,221
Increase ...	92,168	526,331

MINING

Fu Chung Corporation's Sales.—The Fu Chung Corporation advise that sales of their Honan anthracite coal in September amounted to 62,970 tons.

Electrolytic Copper Order.—It is stated that the Chinese Government has ordered 2,000 tons of electrolytic copper from Japanese producers to meet coinage requirements. The product is quoted on the Japanese market at Yen 88 per picul (133⅓ pounds), a sharp advance over the recent quotation of Yen 74.

Mining in Shansi.—Much coal and iron are said to be found in the regions of Luan and Tsechow in Shansi but, owing to the difficulties of transportation, no one has ever thought of exploiting the deposits. Recently Chao Yu-hang started a coal and iron mining company for the purpose, with a good capital to begin with. A representative of the promoter has arrived at Shanghai for the purchase of machinery.

Hongkong Tin Market.—Importations of tin into Hongkong from Yunnan amounted to about 6,000 tons in the first six months of 1918, and 1,500 tons were on hand at the beginning of the year. Of this quantity 6,500 tons has been shipped to America and Europe and 850 tons to China and Japan. Purchases by America totalled 14,981,907 pounds, valued at $9,628,228. The price per picul (133⅓ pounds) has fluctuated between Mexican $103, the price at the beginning of the War, to $182, the highest lvel reached in May, 1918.

Chinese Mining Permits.—The Ministry of Agriculture and Commerce issued in August permits for prospecting and developing to 31 mining companies. These included permits for 1 gold mine (at Kuantienhsien, Fengtien Province); 3 iron mines (near Nanking; at Laiyang, Hunan Province; and at Yungsinhsien, Kiangsi Province): 2 asbestos mines (at Tsingsinhsien and Laiyuan, Chihli Province): 3 manganese mines (at Funing, Chihli Province; Siangtan, Hunan Province; and Yuhsien, Hunan Province): 1 pewter mine (at Kianghua, Hunan Province): 2 sulphur mines (at Anhua, Hunan Province; Tzuli, Hynan Province): 1 lead mine (at Yuanjenhsien, Fengtien Province): 4 soapstone mines, 2 porcelain clay mines, and 12 coal mines.

New Colliery Company.—A colliery company named Miyagi Tanko Kaisha has been organized with a capital of Y.2,000,000 and a coalfield of 3,700,000 tsubo in Miyagi Prefecture.

Kailan Mining Administration.—Recent weekly total output and sales from the Administration's mines were as follows :—

	Output (tons)	Sales (tons)
Week ended Sept. 21	45,695	45,433
Sept. 28	62,267	58,709
Oct. 5	61,575	44,658
Oct. 12	67,970	56,813
Oct. 19	66,007	57,035

SHIPPING

Japanese Shipping Losses.—Japanese merchantmen sunk by German submarines since the outbreak of the War number 26, aggregating 105,933 tons; not including five vessels which are missing with a total tonnage of 19,555. The lost tonnage is about 6 per cent. of the total Japanese shipping. This was the standing on October 1st.

Shipping Line under International Management.—The Tatsuuma Kisen Kaisha's stock will be taken up partly by Iwai & Co., of Kobe, Senda & Co. of Calcutta, and Frank Waterhouse & Co., Tacoma. Senda & Co. will take charge of the shipping in Indian waters and the South Seas, while Waterhouse & Co. will look after the company's interests in America. The capitalization is Y.2,000,000. The Company will enter the coastwise trade with tramp steamers, all of which will be chartered.

C. P. R. Preparing Shipping Programme.—Indications that the Canadian Pacific Railway Company is planning a strong shipping programme are shown by the appointment of Mr. George M. Bosworth as chairman of the Canadian Pacific Ocean Services. He is resigning the position of vice-president in charge of traffic to devote his whole time to the shipping interests of the Canadian Pacific.

Shipping at Tientsin.—Entrances and clearances at Tientsin decreased by 12 vessels and 24,269 tons in the quarter ending March, 1918, as compared with the same quarter in 1917. Of the total 35.2 per cent. was British, 41.9 per cent. Japanese, 20.7 per cent. Chinese, and 2.2 per cent. Norwegian.

South-China South Sea Service.—The Mitsubishi, who recently opened a regular service between Osaka and Hankow, has drawn up a plan to inaugurate a few South-China South Sea services with a view to transporting general merchandise, coal, cereals etc., to begin with. The first route is to operate between Kobe and Singapore viâ Moji, Keelung, Hongkong and Manila with the s.s. *Daiya Maru*, 2,757 tons d.w. The second is to ply from Singapore to Amoy viâ Bangkok, Saigon, Haiphong, Hongkong and Swatow with the s.s. *Tamon Maru* (chartered for the purpose). The third will run between Singapore and Borneo touching at Sarawak, Labuan, Kudat, Sandokan, Tawao, etc., with the s.s. *Katsuura Maru*, 1,720 tons d.w. The fourth is to work the route between Keelung and Manila, calling at Amoy, Swatow, Hongkong and Canton with the s.s. *Rokuro Maru* (chartered) which already started on her first trip. The first mentioned three lines are to be operated bi-monthly, and the last one once monthly with a number of extra steamers if need be.

INDUSTRY

Japanese Cotton Mills at Shanghai.—With the purchase of the International Cotton Mill by Japanese interests, there are now ten big mills in Shanghai under Japanese ownership.

The usual method of transporting goods from place to place is by Chinese cart. This is a strong two-wheeled cart drawn by two or more mules or horses. Many good mules are seen in this district. The horses are of the Mongolian pony type. In the city, carts must have 4-inch tires.

There are now some fifty-odd passenger cars and two or three commercial vehicles in Dairen. The post office has one motor car for mail and the Yamato Hotel is expected to have one for bringing baggage from the wharf very shortly. Commercial automobiles or trucks do not seem to be in demand here.

Dairen is a free port, and no customs duty whatever is chargeable, by treaty with China. On goods going into the interior, across the boundary, the usual Chinese customs duty becomes leviable, not more than 5 per cent.

Practically all of the automobiles here are of American manufacture. The Government has recently put into force a system of registration with estimated values under which they may take over private cars in war time, if necessary, reimbursing the owner at the estimated value.

Public Highways and Transportation in Siam

[BY VICE-CONSUL CARL C. HANSEN, BANGKOK.]

The southern part of the Siamese Kingdom mainly presents an extensive alluvial plain, which is often flooded during the rainy season, making interurban road building difficult and impracticable. Numerous canals, however, traverse this plain in every direction, and these waterways afford every facility for local travel and transportation. In the northern part of Siam and in the Siamese Malaya some road making is in progress in connection with the railway extension, but not of sufficient importance to indicate any extensive use of motor vehicles in the near future.

Besides the customary annual appropriations for the Department of Ways, there appears to have been no allotments made for special road making during last fiscal year.

In Bangkok, the capital, there are some 50 or more miles of macadamized roads and streets, which, together with the numerous and handsome ferroconcrete bridges, are kept in excellent condition for motor traffic. The number of registered motor vehicles in use here approximates 1,100, of which about 300 are trucks of from 1 to 2 tons capacity. The chief use of the latter is transportation of merchandise from the docks and for general delivery.

The prewar price of gasoline was 7 ticals ($3 gold) per case of 10 gallons, while at present the cost is about double that amount.

Nanchang-Kiukiang Railway Extension

[COMMERCIAL ATTACHE A. W. FERRIN, PEKING, CHINA.]

The extension of the Nanchang-Kiukiang Railway from Nanchang, Kiangsi Province, to Foochow and Santuao in Fukien Province, is understood to be in negotiation between the Chinese Ministry of Communications and a representative of the Taiwan-Chosen-Industrial group of Japanese banks.

This railway, which was built by the Chinese of Kiangsi from 1904 to 1915 with funds borrowed from the Taiwan Bank (Yen 10,000,000 at 7 per cent.), runs 87 miles from Nanchang, Kiangsi, to Kiukiang, on the Yangtze River. It was originally intended to carry it southward from Nanchang to Shuichow, in Kwangtung, to connect with the Canton-Hankow Railway, or to Foochow and Santuao, or both, but lack of funds and the generally disturbed condition of China since 1911 have prevented the consummation of these plans.

By the terms of the Japanese loans the railroad was given as security, with the provision that if interest was defaulted three times beginning in 1915 the security should pass to the lenders. The road has not been so prosperous as was expected, owing largely to its incompleteness, and interest has been defaulted three times and will be soon defaulted a fourth. The lenders are in a position, therefore, to demand the delivery of the security but do not seem disposed to do so in view of the appeal of the Kiangsi people to the central Government for the nationalization of the line.

Proposed Loan and Extension to Santuao

The central Government, it is said, has approached the Japanese bankers for a nationalization loan which the banks are said to have agreed to advance, on condition that they be allowed to finance and supervise the extension of the road to Foochow and Santuao. That the Japanese have chosen this route rather than the extension to the Hankow line is due, apparently, to Japanese interests in Fukien Province, which lies opposite the Japanese island of Formosa, and also to the probability that such a route would begin to pay sooner than the Shuichow extension. In fact, it is believed that the Foochow extension will enable the road not only to carry the cost of the extension but the loan required to nationalize the portion of the road already built. The total amount required for both purposes is said to be in the neighbourhood of Yen 60,000,000.

The proposed extension, which was surveyed as long ago as 1905, will run from Nanchang past Chenchiang into Fukien Province, along the Tiu River to Yenping-fu, down the Min River to Foochow, thence northward along the coast to Santuao.

Ports of Foochow and Santuao

Foochow, the capital of Fukien Province, halfway between Shanghai and Hongkong, is a city of 500,000 inhabitants. It is a center of the South China tea trade and has been of commercial importance since 1842, when it was opened to foreign trade. It is also a great timber center and possesses a large dockyard and arsenal and other important enterprises. It has been declining somewhat as a port in recent years because of the lack of proper communication with the interior, which will be remedied by the construction of the proposed railway to Nanchang and the Yangtze River Its harbor is not so good as that of Santuao, 70 miles north. Foochow harbor is well protected, but large ships are obliged to anchor 9 miles below the city.

Santuao was opened to trade in 1899, but on account of the mountainous country behind it, which hampers the carriage to the port of tea and other products, it has not yet acquired great commercial value. The construction of the proposed railway extension will doubtless greatly increase its importance, possibly at the expense of Foochow.

Ramie Fibre in Formosa

The manager of one of the exporting firms in Taihoku, according to Consul Max D. Kirjassoff, Taihoku (Formosa), places the country's annual production of ramie at 2,500,000 kin (3,306,925-lbs.) In 1917, 267,000 kin (353,180-lbs.) were exported to Japan and about 2,000,000 kin (2,645,540-lbs.) to China and Hongkong. Ramie is grown pretty generally throughout the whole island, but the varieties produced in the Giran and Shinchiku districts are considered the best, and of these the so-called Giran variety is the better in quality. There are two harvests of the fiber a year, the first curing occurring in May and the second in August.

From 20,000 to 30,000 kin (roughly, 26,450-lbs. to 39,700-lbs. can be purchased at short notice, and now that the new crop is harvested, offers of quantities up to 60,000 kin (7,450-lbs.) may be obtained. The present price, f.o.b. Keelung, of Giran quality is Yen 34.50 per 100 kin, or, at the prevailing rate of exchange, about $13.56 per 100-lbs.; while Shinchiku "A" quality may be purchased at Yen 31 per 100 kin (about $12.19 per 100-lbs.).

Recently there was a famine of gasoline in the Philippines which was eventually relieved by the arrival of a vessel with a month's supply. Meanwhile gasoline rose to prices ranging from 50 to 80 pesos per case of two tins holding about ten gallons. Probably had there been a grave need for the fuel a boat would have been sent to Java, the source of supply in the Orient and only six days away by an ordinary vessel, but this was not done. As the annual consumption is not great, the Islands rely upon the regular sailings of trans-Pacific boats to bring their supply of petrol.

China's Railways

Now that the war is over it is to be hoped the Board of Communications at Peking will make strenuous efforts to reinforce the rolling stock on the various lines operating under its ægis. The chronic shortage of locomotives and cars of all kinds has for years practically paralyzed the officials responsible for the conduct of railway traffic; has produced erratic services both for freight and passengers, and has resulted in a great loss of possible revenue. Added to the disabilities caused by increased commercial demands is the callous disregard of public requirements by the militarists who seize and hold rolling stock on every northern line whenever the fit takes them to career about the country with their forces. This perhaps is the worst feature of the whole sorry business. Civil war from 1911 onwards was primarily responsible for car and engine shortage because the funds which might have been devoted to purchases were diverted to carry on the absurd internecine struggle, and the supervening Great War augmented difficulties by preventing purchases upon a reasonable basis during the first two years and virtually completely stopped fulfilment of orders from America and Great Britain during the latter two years, irrespective of the amount of money that might have been offered for material. Confusion was made worse confounded by the resumption of civil war in 1915-16 and 1917-18 and the consequent seizure by militarists of all the equipment desired by them. Troops were transported from one place to another to the detriment of all commercial and public business, and trains were converted into mobile barracks and held in sidings for months at a time, and are at this moment still being illegitimately detained and occupied by useless troops. At no time during the past couple of years could the railway authorities be certain of operating to any schedule on any northern line for any sustained period, with the result that even the equipment available was prevented from earning anything near its full capacity. Produce offering after the harvests could only be shifted with difficulty; much of it could not be handled at all. The railways lost heavily as did the farmers who were unable to reach the markets with their crops—and consumers correspondingly could not be accorded the advantage that well-stocked markets would have offered.

Most regrettable, however, is the fact that the railways were unable to take full advantage of the augmented business offering as a result of the increase of steamer rates. The shortage of shipping caused by the war, and the consequent increase in freight rates both on ocean and river vessels, produced a situation where it was cheaper for grain dealers in the regions tapped by the railways from Tientsin to Pukow and Nanking to Shanghai to transport their produce to Shanghai by rail. Increasing cargoes consequently completely staggered the under-equipped Shanghai-Nanking railway with the result that the wharves at Pukow quickly became congested, the godowns and railway yards filled, and arriving grain could not be taken off trucks which were forced to lay up for days waiting the frantic efforts of the Shanghai-Nanking railway, strenuously working insufficient equipment, to cope with the demand for space. This situation further embarrassed the Tientsin-Pukow railway authorities who simply had to shut down on cargoes pending the release of accommodation at their Pukow terminal.

Both the railways mentioned did yeoman service with the limited rolling stock at their command, but the magnificent chance of record earnings offering had to an extent to be allowed to pass.

Passenger services on all lines likewise suffered. Travel on the Tientsin Pukow railway in particular became an adventure. Never could a train be guaranteed to arrive at its destination anywhere near on time; never could the comfort of travellers be assured. Ill-kempt soldiers boarded the trains without paying fares; swamped the compartments; converted dining-cars into sleeping rooms, day and night; made themselves objectionable to all passengers, Chinese or foreign, and rendered the equipment filthy and unfit for occupation by decent people. Military officers stopped and held up trains to suit their whims; brigands caused constant delays, and ultimately, about the middle of November the railway authorities were compelled to alter the timing of the passenger trains from Tientsin to Pukow, and *vice-versa*, to avoid running through the dangerous areas in Shantung Province during the night. The service was thus made slower and more inconvenient to all travellers. The result of this continuous uncertainty and unsatisfactoriness drove people desirous of travelling from Shanghai to the north, or *vice-versa* in comfort and safety, back to the slower steamers. Even with this diversion of passengers, however, the accommodation was insufficient, nor could it be improved owing to shortage of passenger coaches and locomotives. It was hoped long ago to initiate a direct express service from Peking to Pukow, but at no time were locomotives and cars certain to be available, and the scheme had to be postponed time after time. Plans are now being made to begin the service shortly, the ending of the war in Europe and the cessation of hostilities in China encouraging the optimists to believe that the unsatisfactory conditions of the past four or five years will now be minimised if not eradicated altogether. To put on a daily express train from Peking will, however, further hit the freight traffic for it will mean taking a number of locomotives from that service, while it will place a further strain on the passenger equipment now available. There is room for great improvement on every railway in China. Business is continually increasing despite obstructions, and all rolling stock is worked to its uttermost limit; there is not a modern express train on any line, and there is certainly an insistent call for the establishment of such if China is to cater for the increased business which is expected as a result of the termination of the European conflict. If the Board of Communications is wise it will take advantage of present efforts to establish a stable government to have the railways placed under control which will be free from military interference. What is wanted most, of course, is the total reorganization of the army, the abolition of irresponsible Military-Governors in the provinces, and the punishment of any soldier who dares to act on any railway contrary to regulations. Coincident with effort in this direction steps should be taken to acquire sufficient rolling stock to enable the inauguration of services capable of handling all traffic—freight or passenger—according to up-to-date methods.

Japan's Minister at Peking

The retirement of Baron Hayashi as Japanese Minister at Peking has given rise to considerable speculation among the newspapers of Japan with regard to Japan's future policy in China; and the appointment of Mr. Obata, of the Tokyo Foreign Office, as Minister in his stead, has been accepted by a large section of the press of Japan as indicating that a change of method, if not of policy, will be inaugurated. The Chinese press construed the appointment to mean that Japan intends to continue a forceful attitude, citing in support of that belief, the fact that Mr. Obata took up a strong stand at the time of the notorious Twenty-one Demands. He was then Councillor at the Legation in Peking. Some Chinese papers were highly indignant at the appointment and denounced the new nominee as being *persona non grata*. Others were offensive in their comments and counselled the "people of China" to refuse to receive Mr. Obata. The Peking Government does not seem to have been moved by the advice of the newspapers, for it is reported to have expressed pleasure at the appointment. In the meantime, however, Mr. Obata's departure from Tokyo has been delayed by illness.

Now that Baron Hayashi is departing the results of what is described in some Japanese papers as "his policy" are being reviewed, and in many quarters he is denounced for being "pro-Tuan" in his attitude. He is blamed for rendering possible the various loans which went to support the northern militarists, and of being a consistent supporter of Premier Tuan Chi-jui and his war on the south policy. If that is so then Baron Hayashi succeeded very well in camouflaging his real thoughts. While in Peking he professed great apprehension as to the results of the loan policy which kept the pockets of the militarists filled, and at times was strong in his denunciation of the attitude of those of his countrymen who were responsible for that policy.

There is no reason to believe that Baron Hayashi personally was insincere in this respect, and evidence that he was not

Standard Locomotives for Chinese Railways

[CHARLES DENBY, SPECIAL ASSISTANT TO DEPARTMENT OF STATE]

One of the urgent needs of China to-day is locomotives. The demands upon the railways have far exceeded the expectations of the builders. The locomotives bought in the first instance have proved too small and it is now clearly realized by the technical advisers of China that they must standardize upon a type that will meet their needs for a long time to come. This question is being earnestly considered at the present time, and the problem arises for American consideration: Will the standardization be along the lines of American design or will it be made to conform to a European model to the detriment of American interests?

Principal Chinese Railways Under European Control

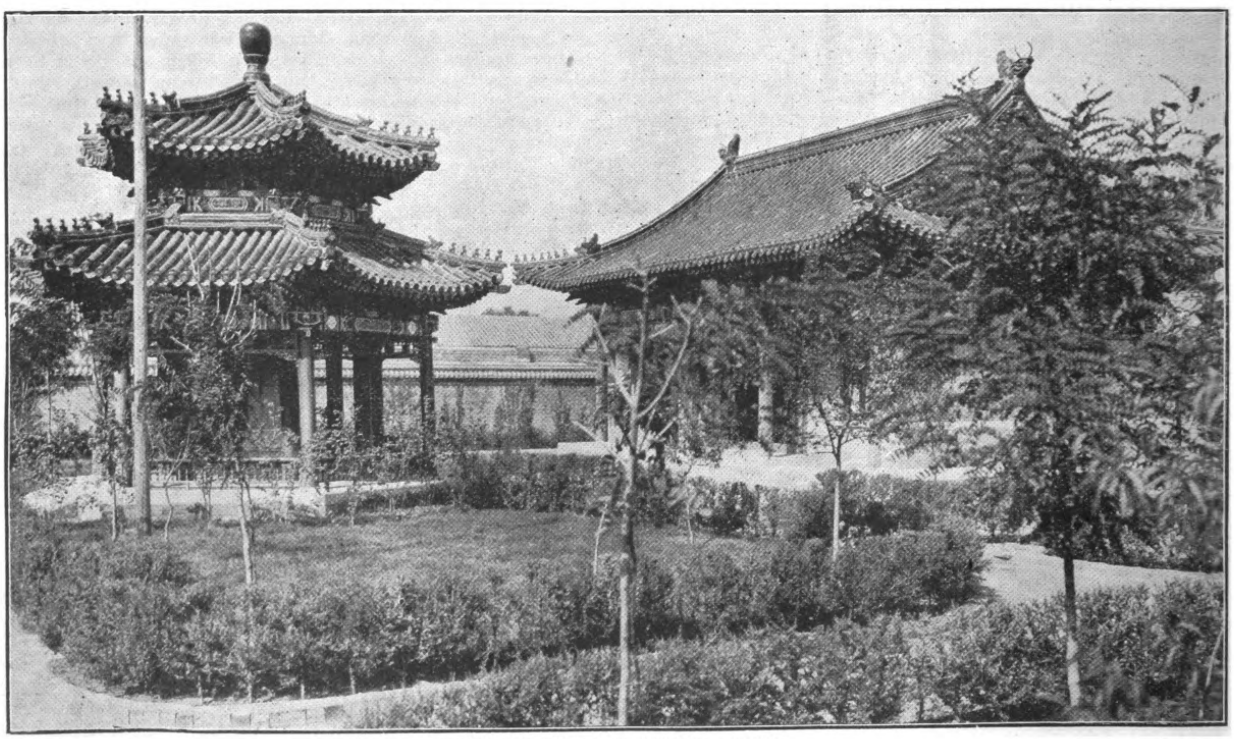
Of the 15 lines composing the system of Chinese Government Railways, only one was built by the Chinese themselves; it is financed by the Chinese Government and is operated exclusively by Chinese. The funds for the construction and equipment of the various other railway lines of China were furnished by foreign capital of various nationalities, but not in a single instance has America so constructed and equipped any of these lines. As a result to-day the Continental (European) design of locomotive is predominant in China. On some of the lines, notably those under English and (hitherto) German influence, not a locomotive other than those built in accordance with the prevailing design common to the nation financing the railway was purchased or even considered, either for initial or subsequent equipment—at least, up to the time of the outbreak of the war. Only in the case of the Chinese financed and operated railway have American builders been given a free hand, with the result that an American design was adopted and a thorough standardization of power effected on this line.

The latest statistics published by the Chinese Government railways (June 30, 1915) show that of a total of 6,600 kilometres (about 4,100 miles), including main and branch lines, industrial tracks, sidings, etc., the three principal truck lines compose approximately 62 per cent. of the total. One of these three lines is under English, one under Belgian and French, and one under combined English and (hitherto) German influence. Out of a total of 638 locomotives in service on all lines at that time only 15½ per cent. were of American design and manufacture; and on the English, Belgian, and French lines mentioned, which operated at that time 365 locomotives, or approximately 60 per cent. of the total, only eight, or approximately 2.2 per cent., were of American design and manufacture.

Few Locomotives Purchased Since War

Since the outbreak of the war but few locomotives have been purchased and placed in service in China, owing principally, perhaps, to a lack of available funds and to internal disorders in the country. As a result of this and of the constantly increasing traffic, the railways are now urgently in need of power. As is often evidenced in the case of new roads, this particular instance of China shows that traffic has increased far beyond the estimates that were made when the initial equipment for power was under consideration, with the result that in addition to the natural depreciation and abandonment of locomotives on account of age, those left in service are light and not of adequate power for the most part to handle the traffic of to-day.

In 1917, 24 additional heavy locomotives were placed in service, and in 1918, up to the time of the present writing, two more have been erected and four are under process of assembly for the Government lines. Orders have been placed or are about consummated for the further addition of 56 locomotives—all for the urgently needed heavier power. Of this number 38 are to be built strictly in accordance with American design and all are



TEMPLE OF THE FOUR PATRIOTS, PEKING

Erection of which was inspired by His Excellency Lou Tseng-tsiang, Minister of Foreign Affairs.

See article on page 492.

from American builders. In addition to this number there are two on order and 21 being considered for private lines, these are to be of American design and standards.

Plan for Standardization of Power and Rolling Stock

The question of the standardization of power and rolling stock is just now being most earnestly considered by the Chinese Government, but a considerable time may elapse before this scheme becomes an assured fact. One American builder has for the past seven years been anticipating the coming of this event, and since the standardization of power on the Peking-Kalgan line every locomotive sold into China by this builder, whether for Government or privately owned railways, has been designed and furnished with this end in view.

Pending the adoption of a standardized power by the Chinese Government the greater the number of modern American design locomotives that can be furnished to the railways here the greater will be the opportunity to obtain the adoption of a strictly American design as the standard of power for China. The benefit of this to American interests is incalculable and should not be lost sight of.—*From U.S. Consular Reports.*

Marine Engines and Motor Boats in the Far East

[CONSUL A. E. CARLETON, HONGKONG, BRITISH CHINA.]

The greater development of the American trade in marine engines of all types in Hongkong and the territory tributary to it is a matter of educational propaganda. The economic value of motor boats must be fully demonstrated to the Chinese and a motor must be produced that is reliable, simple to operate, and not too expensive. High finish is of secondary importance to reliability.

The need of educational propaganda is best evidenced by the experience of a local firm, which some years ago endeavored to interest the fishing-junk people to install motors. A number of these fishermen were much impressed with the idea and went so far as to order a few motors, but at the last moment canceled the order, giving as their reason that it would result in "bad joss" since their fathers had never used motor power on their fishing junks. It is, therefore, this superstition, if it can be called that, which must be overcome before this type of junks can be fitted with motors. But the Chinese are utilitarians above all things, and there is reason to believe that success, or reasonable success, might be obtained if there were introduced on this market a motor that is (1) very cheap in first cost, (2) so simple to operate that a person with no mechanical knowledge can operate it after receiving a little instruction, (3) capable of withstanding abuse, and (4) not dependent upon magneto or batteries for ignition.

Best Commercial Type of Motor

If such a motor can be produced and the manufacturers are willing to send out a skilled mechanic to demonstrate, it is possible that the Chinese fishermen might be, and probably would be, induced to purchase. The same applies in more or less degree to junks in the foreign trade or plying between China coast ports and Hongkong.

For commercial purposes it appears that, in general, crude-oil motors of 35, 50, and 80 horsepower or semi-Diesel engines burning heavy oil or heavy kerosene engines are the types best suited for Hongkong and river traffic. Kerosene motors are thought to be better for commercial work. Under present war conditions crude-oil motors can successfully compete with steam launches, but under normal conditions it is believed by some dealers in Hongkong that the steam launches will retain their position owing to their greater reliability.

Chinese in Canton are making a heavy-duty motor, but it is not thought that this can successfully compete with foreign makes. The Chinese have copied the "Bolinder" type, which they found the simplest of all hot-bulb motors.

Motor Boats at Tientsin

[CONSUL GENERAL P. S. HEINTZLEMAN, TIENTSIN.]

There are only eight commercial motor boats in the Tientsin district at present, three 40-foot and five 25-foot boats. They are mostly used by the native water police and the foreign steamship companies in patrolling the Hai Ho (Peiho) River from Tientsin to its mouth, a distance of 47 miles. There are, as well, a few motor boats here owned and used by foreigners for pleasure purposes only. All these boats have been built to order by different concerns in Tientsin—among them the Eastern Engineering Works and Brossard, Mopin & Cie. The Taku Pilot Co. also builds motor boats of various types.

It is not believed that the motor-boat industry here will witness any market development in the near future, and the termination of the war is not likely to affect it in any way. Such increase in the demand for motor boats as may occur will be very small and will be supplied locally. Rail rather than water transportation in this district is being developed, and the public highways are being gradually extended and improved, whereas on the other hand the streams are being allowed to silt up.

Motor Craft in Amoy Harbor

[VICE CONSUL ANDREW J. BREWER, AMOY.]

In this port all foreigners live on a small island known as Kulangsu, while the business is all done on the island of Amoy, this necessitating some means of crossing the harbor every day. Formerly four and six oared gigs were used for this purpose; but a typhoon last year destroyed these gigs, and most of the business houses and the Marine Customs have replaced them with motor craft, of which there are perhaps 18.

The Amoy motor boat is anomalous, consisting as a rule of a 14 or 18 horsepower engine installed in a native sampan. These boats are found more satisfactory for crossing the harbor in rough weather and for approaching jetties at low tide, when a very shallow draft is required. The engines used are principally of American manufacture, being brought into this port through Hongkong and Shanghai. There are no facilities for the direct importation of American engines

It is difficult to say what conditions here after the war will be. There are one or two motor sampans owned by Chinese at the present time, and if the Chinese develop a decided fondness for motor boats a good market may be established, for there are many Chinese wealthy enough to purchase them. If foreigners continue to be the principal users it is probable that there will be a demand for a few engines every year, but as the foreigners are few in number this demand can never become very great.

Japan's Trade in Boats and Engines

[CONSUL ROBERT FRAZER, JR., KOBE.]

The general demand for internal combustion marine engines, as well as the types of motor boats in use in Japan was fully described in a report from the Kobe consulate published in Commerce Reports on November 1, 1916. Conditions in this line have not changed appreciably since that article was published.

There are very few pleasure motor boats in this consular district, although the Inland Sea, one of the finest stretches of water for pleasure cruising in the world, starts just outside the entrance of Kobe harbor.

At present the demand is for boats and engines for business purposes. Owing to the high price of gasoline (now about 75 cents gold per gallon), engines using that fuel are out of the question for work boats. Practically all of the new engines being installed are hot-bulb motors, burning kerosene, stove distillate, or neutral oil. More and more of these engines are being used every year for fishing vessels and for work boats in the harbors.

The engines are usually built in Japan, although some are imported. In 1913, Japan's imports of gas, petroleum, and hot-air engines amounted in value to $608,125. In 1914 there was a drop to $182,825, and this decline continued into the next year, when imports aggregated only $81,600 in value. In 1916 a slight recovery occurred, imports amounting to $89,950; and in 1917 further progress was made, the total for that year being $131,400.

Before the war—that is, in 1913—48 per cent. of the imported engines came from Great Britain, 30 per cent. from Germany, 8 per cent. from Sweden, 6.5 per cent. from the United States,

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

Siamese Railway Fares.—The Siamese State Railway Department increased the rate on passenger traffic for all the lines of the State railways by 20 per cent. as from July 1. This step had to be taken owing to the rise in price of railway materials received from Europe and America, and the heavy maintenance expenses incurred in repairing the damage caused by last year's floods.

Siam Short of Rolling Stock.—On the Siamese Northern Line there is a usual daily shortage of about 200 wagons, and sometimes as much as 400 wagons are short, while on the Northern Line the shortage reaches about 100 wagons per day. This condition is owing to the fact that new goods wagons cannot be built there because of lack of iron framework, wheels, steel tires, and other iron and steel fittings, which are not manufactured in Siam.

Siamese to Study American Railways.—Eight Siamese students connected with the Royal Siam State Railways are to study in the United States American railway methods. This is a new departure inaugurated by the recently appointed commissioner general of the Siamese State Railways. These students will be under the care of the Siamese Legation in Washington.

Kirin-Changchun Line.—Work is in progress on the tunnel through Tumenling Pass on the Kirin-Changchun Line which was to have been started last spring, but which was held up by the interference of rains in brick-making. A supply of bricks is now ready, and preparations for tunnelling work have been taken in hand.

Japanese Railway Returns.—The freight transported on Japanese railways during the first half of the current year aggregated 28,248,706 tons or 154,365 tons per day, the proceeds therefrom being Y.51,137,659 or Y.279,441 per day on an average. This is an increase of 2,839,000 tons or of 13,851 tons per day, and of Y.8,705,000 in the total proceeds as compared with the returns recorded for the preceding corresponding period.

MINING

Lead in Heilungkiang.—A wealthy Chinese is planning to establish a company at Harbin with a capital of $200,000 to explore deposits in Heilungkiang Province. He recently discovered lead deposits in Mulan Prefecture and has applied to the Department of Agriculture and Commerce, Peking, for the necessary concession.

New Source of Graphite.—A Chinese ore dealer is reported to have discovered a graphite deposite of superior quality at Chintsailkou, in Kuantien Prefecture, Fengtien Province.

Wolfram Ore in South China.—A syndicate has applied for the privilege of developing the wolfram deposit at Pak Shak Lum Hill, in Heungshan district, Kwangtung Province, by offering $30,000 in advance as a tax, and also promises to lend $100,000 to the Government within ten days after the permission is granted.

Japanese Colliery Combination.—The Yamashita Kisen Kaisha is reported to be arranging the establishment of a mining company with a capital of Yen 10,000,000 by combining the interests of the Yamashita Coal Company, the Hombetsu Colliery (Hokkaido), and the Yamashita Gomei Kaisha. The last named holds extensive mining concessions at Otani, Miyao and Tsuhara, Kyushu.

Sale of Siberian Mines.—A Japanese correspondent at Chita reports that the Provisional Siberian Government announces the sale by auction at Irkutsk of two hundred and eight mines on February 25, 1919. The number of the mines which foreigners are entitled to buy is limited to thirty-eight, but those who have the special permission of the authorities can bid for others. The measure is resorted to by the Siberian Government with a view to supplementing its finances.

Suan Mines.—The mills on the Suan Concession, Korea, during the month of October, treated a total of 16,700 tons of ore resulting in a gross recovery of Yen 258,000.00. Ore developments in the Tulmichung and Tong Ahm mines continue to be highly satisfactory.

SHIPPING

Standard Shipbuilding at Hongkong.—The British Government has contracted with the Hongkong and Whampoa Dock Co. (Ltd.), Hongkong, for the construction of six standard steel ships. The dimensions of the first boat are 325 by 45 by 26-ft., with a carrying capacity of 5,000 tons. The vessel has been constructed from American manufactured steel materials. Five other standard ships are in hand in the dockyard, each of 8,000 tons carrying capacity; their dimensions are 400 by 52 by 31-ft. Four of these vessels will be built of American steel materials and the fifth one of British steel.

Japanese Shipyard enters Shipping Trade.—The Kawasaki Dockyard Co., Kobe, is embarking upon the shipping business on its own account. According to its plan, 30 cargo-boats of 6,000 ton d.w. class will be built in the next fiscal year for exclusive use of the Company, to equal the tonnage of the Toyo Kisen Kaisha. Three steamers have already been assigned to service in the South Seas. Thus the first regular exclusivee cargo service in Japan will be inaugurated and maintained by the Company. The Company established recently a Mercantile Marine School and is equipped with every necessary factor for the maintenance of a marine transportation system.

Chinese Steamship Line.—A new steamship corporation, owned and controlled by Chinese capitalists, was inaugurated in Shanghai, on September 4, to transport salt from Haichow to Chinkiang. The company will operate three chartered Japanese steamers.

Reconstructed River Steamers for Coast Trade.—The San Peh Steamship Co. have purchased and reconstructed for service on the coast the two French steamers formerly in the Canton River Service, the *Paul Beau* and *Charles Hardouin*.

Shanghai-Japan Freight Rates. — Freights between Japan and Shanghai recently rose by about 30 per cent., the rate on ordinary merchandise from Japan to Shanghai being raised from Y.7 to Y9.50, while the new rate for ordinary merchandise from Shanghai to Japan ports is $9.50 Mex. The Nippon Yusen Kaisha has decided to grant a rebate of 5 per cent. on its Shanghai line to shippers who ship only by the N.Y.K. vessels. The rebate is to be calculated on the total freights paid in a year, and will be paid six months after the closing of accounts.

Chinese Line for Trans-Pacific Trade.—Chinese papers report that a new steamship company known as the Chinese Pacific Steam Navigation Company is about to be formed at Shanghai by Chinese merchants abroad which will lease ships from the China Merchants' Steam Navigation Company to carry passengers and cargo in the trans-Pacific trade. At the last meeting of the directors of the China Merchants' S.N. Co., it is understood, it was decided to charter six of the Company's fleet to the new concern. The names of the six vessels are the *Hsinkong, Hsinchang, Kwanglee Kungping, Irene* and *Chiyuen*, the charter price of which is to be fixed at $105,000 per month. It is said that both parties have agreed to the terms and an agreement will be concluded shortly.

A Shanghai Launching.—The New Engineering Works of Shanghai launched the s.s. *Hydra* on November 6, for a Norwegian firm. The vessel is 245-ft. in length over all, by 37-ft. beam, and is 17-ft. in depth, with deadweight capacity of 2,050 tons. The *Hydra* will be equipped with triple-expansion machinery of 1,000 h.p. supplied by two cylindrical boilers. The enginers, boilers and auxiliary machinery have been constructed by the builder. Another vessel, the s.s. *Hero*, built by the same firm, had its speed trial on November 4, and easily attained a mean speed of 11.56 knots. The *Hero* is 254-ft. in length over all, 37-ft. in breadth, and 17-ft. in depth, with deadweight capacity of 2,050 tons. The greater part of the machinery was constructed by the builder.

Chinese Yard Launches 4,500-ton Steamer.—The s.s. *Mylie*, launched by the Nicholas Tsu Shipbuilding Works at Shanghai, on October 22nd, is the first of two ships in hand by the builder for the Haichow Steamship Co. Originally designed for carrying salt from Haichow, the *Mylie* was altered for the Saigon-Rangoon trade and is of the spar-deck type with accommodation for 35 first class, 50 second class, and 400 deck passengers. Her dimensions are 262-ft. by 40-ft. by 25-ft. 3-in., with a loaded displacement of 4,500 tons. She will be driven by triple-expansion machinery of 1,300 horse-power supplied with steam from two water-tube boilers, at an estimated speed of ten knots. The machinery and winches, in-

SOUTH MANCHURIA RAILWAY

Important Route in the Tokyo-Peking-Harbin-Shanghai Routes

Operating all Lines in South Manchuria and Chosen (Korea) East of Mukden

MAIN LINES

Dairen to Changchun, via Mukden.

Fusan to Changchun, via Seoul, Antung, and Mukden.

BRANCH LINES

IN SOUTH MANCHURIA.—Dairen to Port Arthur; Tashihchiao to Yingkou (Newchwang); Suchiatun to Fushun.

IN CHOSEN.—Heijo (Pyongyang) to Chinnampo; Seoul to Jinsen (Chemulpo); Taiden to Kunsan and Moppo; Seoul to Gensan; San Oshin to Masan; Koshu to Kenjiho; Heijo to Jido; Seishin to Kwainei; Gensan to Yeiko, etc.

CONNECTIONS

AT CHANGCHUN.—Chinese Eastern Railway (for the Great Trans-Siberian Route).

AT CHANGCHUN.—Kirin-Changchun Line of the Chinese Government Railways.

AT SSUPINGKAI.—Ssupingkai-Chengchiatun Line of the Chinese Government Railways.

AT MUKDEN.—Peking-Mukden Line of the Chinese Government Railways.

AT DAIREN.—South Manchuria Railway Co.'s Dairen-Tsingtao-Shanghai Mail Steamer Line, etc.

AT FUSAN.—Imperial Japanese Government Railways Channel Steamer Service (for Shimonoseki).

TRAIN SERVICE

EXPRESS TRAINS.—Owing to the suspension of the Express Train Service between Europe and the Orient, with no immediate prospect of its resumption, all the Express Trains have been discontinued until further notice.

ORDINARY TRAINS, to some of which Dining Cars and Sleeping Cars are attached, run twice daily, leaving each terminus on the main lines every morning and every evening, and connecting with trains on the Connecting Railways and Steamers. Sleeping berths should be reserved in advance.

STEAMER SERVICE

PASSENGER, MAIL, and CARGO LINE.—Dairen-Tsingtao-Shanghai

STEAMERS.—SAKAKI MARU (Turbine, Twin Screw), 3,402 tons; and KOBE MARU, 2,923 tons. Wireless telegraphy and qualified doctors on board each steamer.

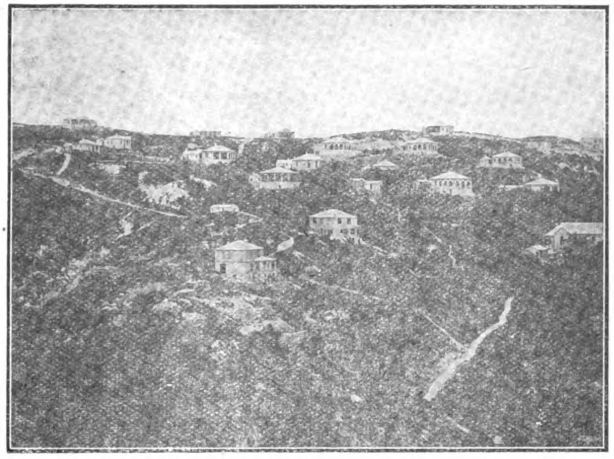
SAILINGS.—Once weekly by each steamer from both Dairen and Shanghai, one steamer calling at Tsingtao on the outward trip and the other on the homeward trip.

SOUTH MANCHURIA RAILWAY COMPANY

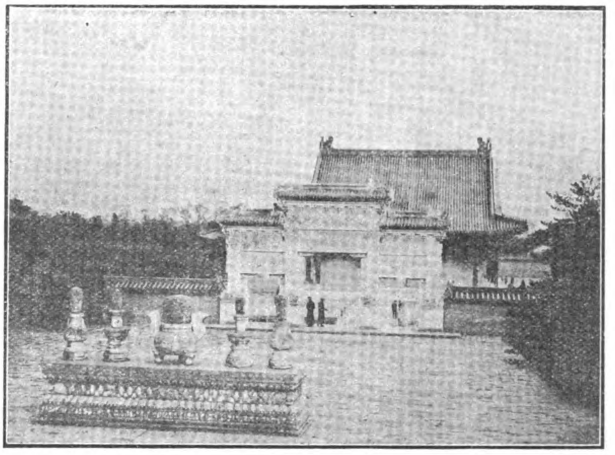
Head Office: Dairen Branch Offices: Tokyo, Seoul, Harbin, Kirin, Shanghai & Peking.

Tel. Add.: MANTETSU. Codes: A.B.C. 5th Edition, A1, & Lieber's.

CHINESE GOVERNMENT RAILWAYS



SUMMER RESORT AT CHI KUNG SHAN



TOMB OF EMPEROR YU CHENG NEAR LIANG KOW CHWANG

PEKING-HANKOW LINE

"The Road Through the Heart of China"

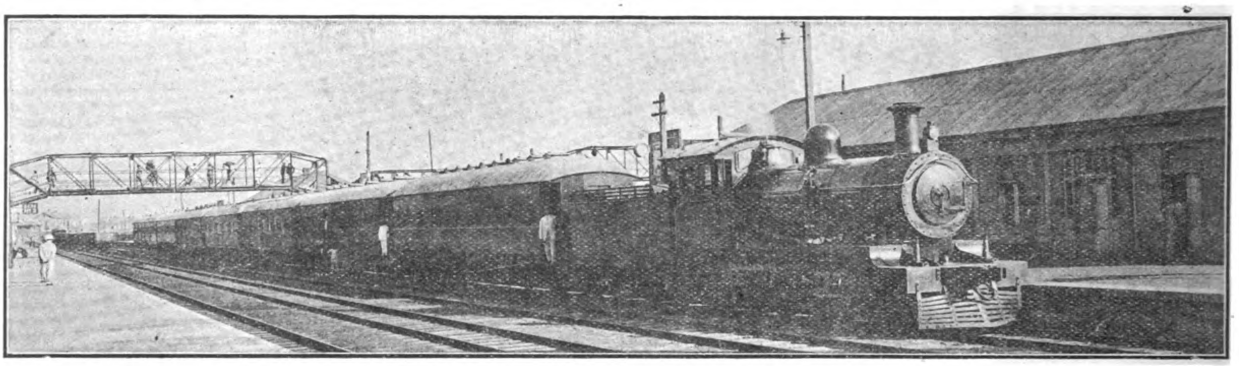
THE Peking-Hankow Line, passing through the heart of China, enables the traveller to catch a glimpse of Old China. Ancient walled cities, temples, pagodas, etc., etc, are seen from the comfortable seats of the daily Direct Train operated by the Peking-Hankow Railway. On leaving Peking the train departs from the famous Chien-men Gate and carries the traveller through the historical and legendary portion of the country to the modern emporium of trade at Hankow. Connections are made with the Cheng-Tai Line at Shihkiachwang, with the Tao-Ching Line at Sinsiang, with the Pien-Lo and Lung-Hai lines at Cheng-Chow and with the Canton-Hankow Line at Hankow.

Liang Kow Chwang (for Hsi-Ling Tombs)—Amongst the main points of interest on this Line the Western Tombs stands above all. Being situated close to Laing Kow Chwang station, 79 miles from Peking, visitors to the Capital should not fail to include a visit to these beautifully adorned Imperial Tombs, situated amongst the hills in a region selected in 1730 by the Emperor Yu-Cheng for his final resting place. The mausoleums of three succeeding Manchu Emperors and Empresses are there found The whole district is hilly and beautifully wooded and abounds in clear streams, the air is invigorating and the Tombs should be visited by every one in search of the extraordinary and beautiful.

Sin-Tien (for Chi Kung Shan Summer Resort)—The station of Sin-Tien, 643 miles from Peking and 116 miles from Hankow, was originally a mere village, but is now coming into prominence as a Summer Resort, from which Chi Kung Shan mountain is reached. Every summer hundreds of foreign residents from Hankow and the Yangtze River towns make a point of spending their summer vacations there, where many beautifully appointed bungalows await them. This resort realizes the dream of the vacationist and it is, in very truth, a region to bring vigour to the jaded, and renewed inspiration to the man or woman weary of the ordinary life.

For Particulars apply to the "Information Bureau" of the Line at Peking, to any office of the International Sleeping Car Company, or Thos. Cook & Son.

CHINESE GOVERNMENT RAILWAYS



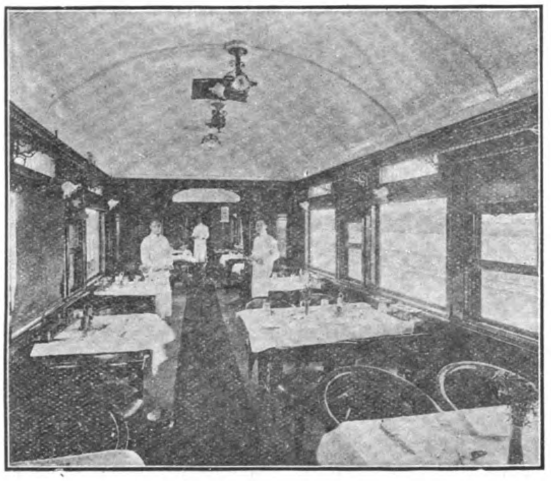
TRAIN DE LUXE AT TIENTSIN EAST STATION

The Peking-Mukden Line

Through service from Peking to Mukden, connecting at Mukden with the South Manchuria Express from Trans-Siberian Route. At Peking connection is made with the Peking-Hankow Railway for Hankow and Yangtze Ports, and Intermediate Points reached by the Chen-Tai Line to Taiyuanfu, the Tao-Ching Line, and the Peinlo Railway to Kaifengfu and Honanfu. Connection is also made at Peking with the picturesque Kalgan Line, "The road to the Great Wall." At Tientsin (Central) connection is also made with the Tientsin-Pukow line for Tsinanfu and Shanghai.

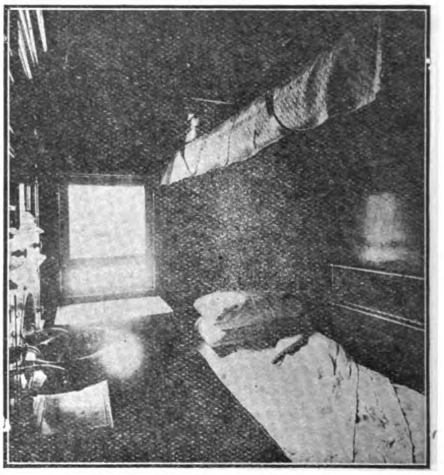
THE RAILWAYS OF NORTH CHINA PASS THROUGH THE MOST INTERESTING PART OF CHINA

PEKING.—The Capital, with the Walls, Palaces, Temples and Tombs.—**TIENTSIN.**—The Great Trade Centre of North China.—**TONGSHAN.**—The Largest Mining and Industrial Town in the Country.—**SHANHAIKWAN.**—Where the Great Wall ends at the sea.—**NEWCHWANG.**—The Busy Commercial Port of Manchuria.—**MUKDEN.**—The Ancestral home of the Manchu Dynasty. A Miniature Peking, with its Walls, Imperial Palaces, Temples and Tombs.



DINING CAR ON TRAIN DE LUXE

The through trains are equipped with Buffet and Dining Car Service. A Comfortable, Modern Train De Luxe of Compartment Sleeping Coaches is operated in connection with the through service of the Trans-Siberian and South Manchurian Railways.



FIRST CLASS SLEEPING BERTH, TRAIN DE LUXE

Through tickets to London and other places in Europe can be obtained at Peking and Tientsin from which stations passengers' luggage can be registered through to destination. Through tickets are issued and passengers' baggage registered through between the important Stations on the Peking-Mukden Railway and the South Manchuria Railway, Chosen (Korean) Railway and Imperial Government Railways of Japan.

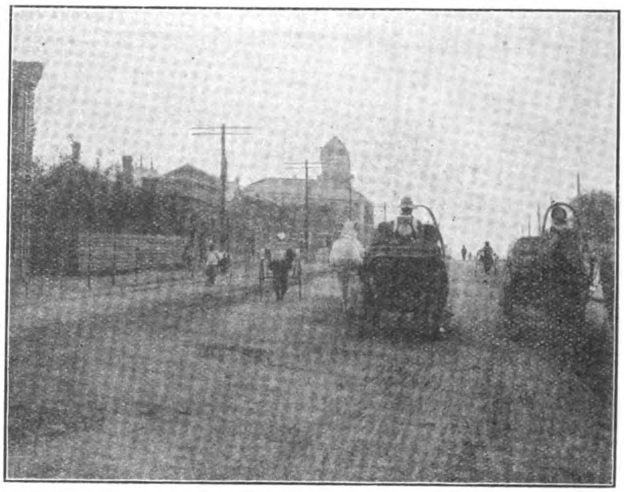
For information regarding the many places of interest in China, Tourists will find "The Travellers' Handbook for China" with maps most useful. It is obtainable at any of the offices of Thos. Cook & Sons. The Chinese Government Railways Time Table book with Railway map can be had at any of the offices of Thos. Cook & Sons, and the International Sleeping Car Co., Hotels, Clubs and at all important Stations. Full particulars on application to any of the Stations or to the Traffic Manager of any of the Railways mentioned and on application to any office in America, Europe or the Far East of The Cie. International des Wagons-Lits, Thos. Cook & Sons, or

TRAFFIC MANAGER, CHINESE GOVERNMENT (PEKING-MUKDEN), TIENTSIN.

中華民國政府吉長鐵路行車時刻表
CHINESE GOVERNMENT RAILWAYS—KIRIN-CHANGCHUN LINE
TIME TABLE

DOWN TRAINS		STATIONS	UP TRAINS	
DAILY			DAILY	
MIXED	MAIL		MAIL	MIXED
P.M.	A.M.		P.M.	A.M.
1.20	8.30 d.	TOUTAOKOU	a. 6.00	11.10
1.30	8.40 a.		d. 5.50	11.00
1.39	8.42 d.	2.79 CHANGCHUN	a. 5.45	10.56
2.14	9.12 a.		d. 5.15	10.22
2.19	9.14 d.	12.69 KALUN	a. 5.13	10.19
2.49	9.44 a.		d. 4.43	9.46
2.51	9.45 d.	11.13 YINMAHO	a. 4.42	9.40
3.07	9.58 a.		d. 4.29	9.25
3.09	10.00 d.	5.38 HSIACHIUTAI	a. 4.27	9.20
3.22	10.12 a.		d. 4.14	9.07
3.24	10.13 d.	4.58 YINGCHENGTZE	a. 4.13	9.05
3.51	10.35 a.		d. 3.53	8.42
3.55	10.43 d.	9.14 TUMENLING	a. 3.48	8.37
4.42	11.22 a.		d. 3.08	7.51
4.46	11.24 d.	9.26 HUAPICHANG	a. 3.06	7.47
5.07	11.37 a.		d. 2.52	7.30
5.08	11.38 d.	6.46 KUTIENTZE	a. 2.51	7.28
5.27	11.53 a.		d. 2.37	7.11
5.32	11.55 d.	6.83 KIUCHAN	a. 2.35	7.07
5.58	12.15 a.	8.30 KIRIN	d. 2.15	6.45

NOTICE:—"d" = Departure. "a" = Arrival. 25th November, 1917

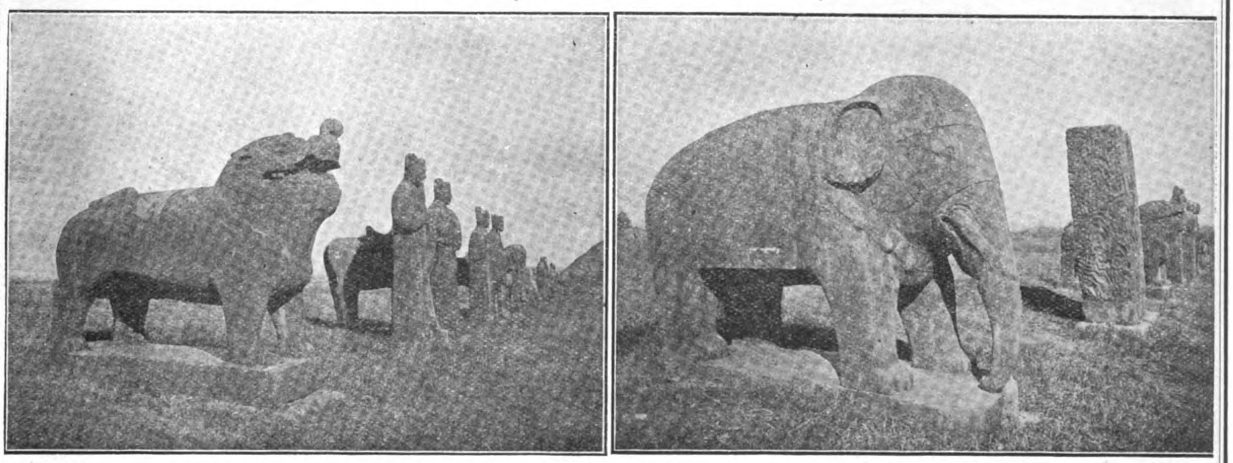


STREET SCENE, CHANGCHUN.

THE PIENLO RAILWAY

(Kaifeng-fu to Honanfu)

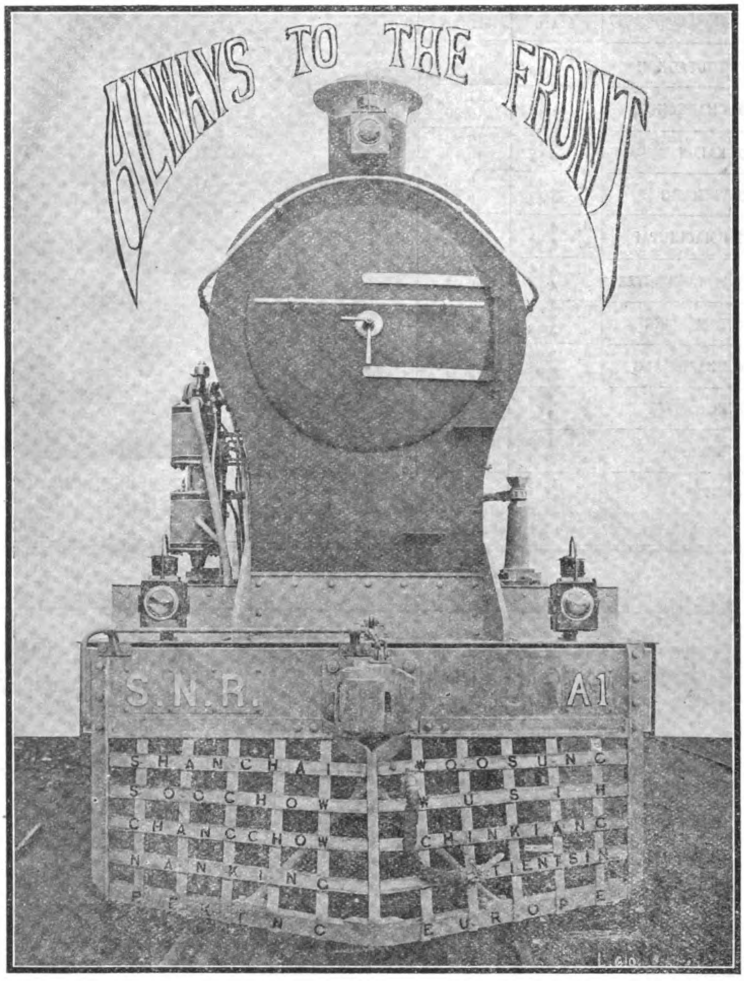
"THE FIRST SECTION OF THE PROJECTED CENTRAL TRUNKLINE"



THE SUNG TOMBS NEAR KAIFENG-FU ON THE PIENLO RAILWAY.

The line connects with the through service of the Peking-Hankow Railway at Tcheng Tchéou, enabling the traveller to visit Kaifengfu, the provincial capital of Honan, and the old capital of the Empire at Honanfu.

CHINESE GOVERNMENT RAILWAYS
SHANGHAI-NANKING RAILWAY



ACCELERATED SERVICE BETWEEN SHANGHAI AND PEKING

Express and Fast Trains run daily between Shanghai North, Soochow, Wusih, Changchow, Tanyang, Chinkiang and Nanking, to which places weekend tickets, at reduced rates, are issued.

Through Bookings to Chinese Government and Japanese Lines

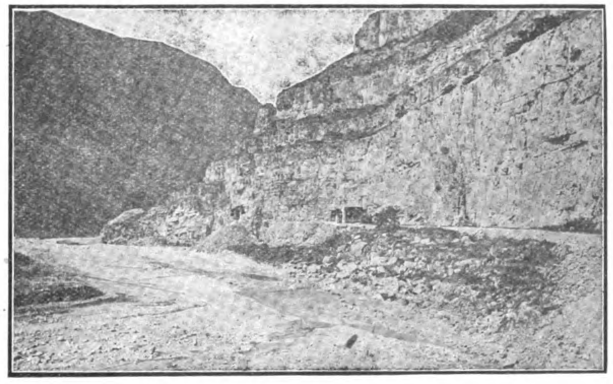
Reduced Rates for Picnic and other Parties

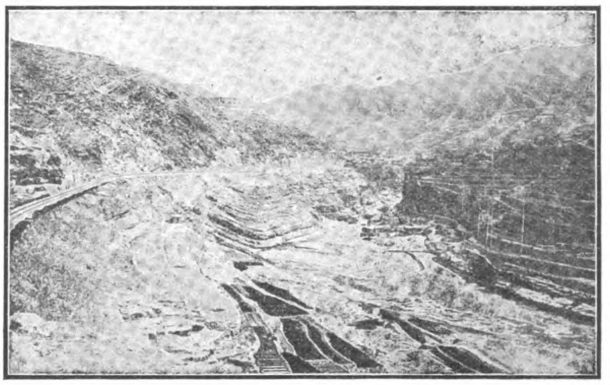
For further information apply to THE TRAFFIC MANAGER, SHANGHAI NORTH STATION,
TELEPHONE No. 900

CHINESE GOVERNMENT RAILWAYS

CHENG-TAI RAILWAY

(Chinese Government Shansi Line—Chengtingfu to Taiyuanfu)



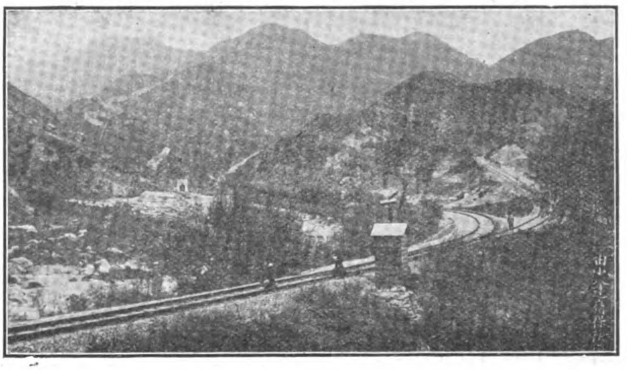


VIEWS ALONG ROUTE OF CHENG-TAI RAILWAY

The trains of this line connect with the through service of the Peking-Hankow Railway, affording Travellers the opportunity of seeing the most picturesque part of China. The line passes through a mountainous section of country, rich in Mineral Resources to the Provincial Capital of Shansi at Taiyuanfu. This interesting city is a great educational centre, and famous for the fine quality of its artistic embroideries.

PEKING-SUIYUAN LINE

"The Road to the Great Wall"



This line follows the ancient caravan route and military highway from Mongolia into China by the way of the historic Nankow Pass. This pass is the Key to Peking, and Kalgan is the gate of the Country. From here the great camel caravans set out on their long journeys across Mongolia to Siberia and Central Asia. This old frontier mart, retaining its time-honored characteristics, one of the most interesting sights of the Old World, is made accessible by the new railway. The line also carries the passenger in two hours from Peking to Nankow, when the Great Wall of China and the Ming Tombs may be seen. A foreign hotel is operated by the railway authorities at Nankow, where chairs and guides may be secured for the Tombs.

JAPAN

Imperial Government Railways

The Most Important Link of the World's Highway

TICKETS

TO AND FROM

THE CHINESE GOVERNMENT RAILWAYS

Single and Return Tickets

BETWEEN

principal stations in

JAPAN AND CHINA

PERIOD OF VALIDITY: Single ... ... 40 days
Return ... ... 110 days
(at 20 per cent. reduction)

Japan-China Party Trip Tickets

25-50 per cent. reduction
for 10 or more passengers

PERIOD OF VALIDITY: 2 months.

ROUTES: Return trips between Japan and China viâ Chosen or Circular Tours.

Japan-China Circular Tour

about 30 per cent. reduction

ROUTES: Japan — Chosen — South Manchuria — Peking-Hankow (N.K.K.)-Tsinanfu-Nanking-Shanghai (N.Y.K.) — Japan or vice versa.

TICKETS: Good for 4 months.

Japan-China Overland Tour

between Yokohama and Shanghai
for Steamer Passengers of

Nippon Yusen Kaisha, Toyo Kisen Kaisha, Canadian Pacific Ocean Services, and Pacific Mail S.S. Co.

First Class throughout, no extra for Express Trains, and Liberal stop-over privileges.

TICKETS: Good for 3 months. FARES: Y. 100 by N.Y.K., Y. 120 by T.K.K., C.P.O.S. and P.M., Y. 110 to and from Hankow by C.P.O.S.

Japan-China Through Parcel Traffic

between principal stations in Japan and Peking, Tientsin, Hsinmin, Kalgan, Tsinanfu, Nanking, and Hankow, via Chosen at Cheap rates.

Steamer Passengers Overland Trips

IN JAPAN

FREE

RAILWAY INTERCHANGE TICKETS

Issued by N. Y. K.—T. K. K.—O. S. K.—C. P. O. S.—P. M.—P. & O.—M. M.—B. I.

FOR PARTICULARS, TIME-TABLES, MAPS, ETC., PLEASE APPLY TO
TRAFFIC DEPARTMENT, IMPERIAL GOVERNMENT RAILWAYS,
TOKYO, JAPAN

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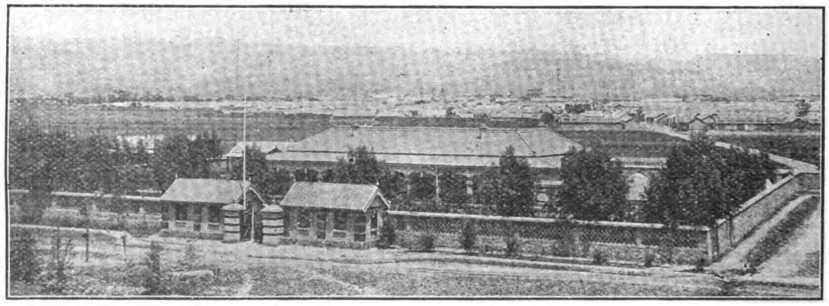
CHINESE GOVERNMENT RAILWAYS

The Tao-Ching Railway

TAOKOU TO CHINGHUA

(CHINESE GOVERNMENT HONAN LINE)



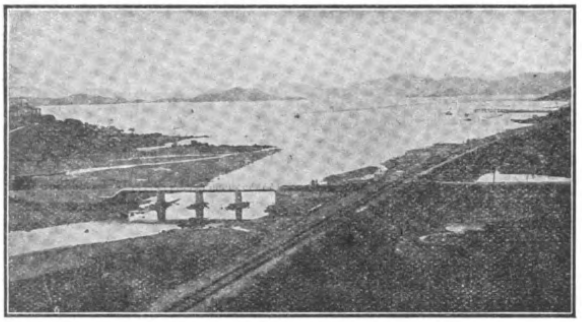
A VIEW ON THE TAO-CHING RAILWAY, WITH MINE IN DISTANCE.

"CHINA'S ROAD OF ANTHRACITE"

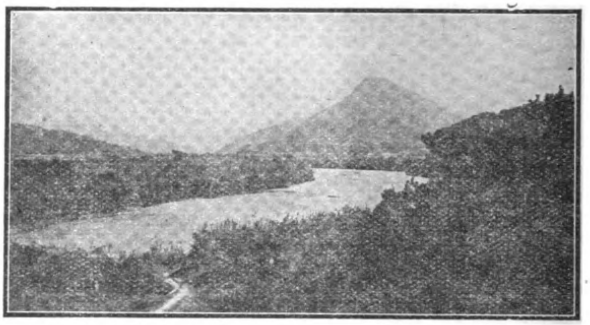
The trains of this line connect at Sin-Siang-Sien with the through service of the Peking-Hankow Railway. It taps the great Anthracite Coal Deposits of Shansi, and conveys the products of the Mines to the nearest navigable river.

CANTON-KOWLOON RAILWAY

VIEWS ON THE BRITISH SECTION (22 MILES) VIEWS ON THE CHINESE SECTION, 89 MILES (Chinese Government Railways)

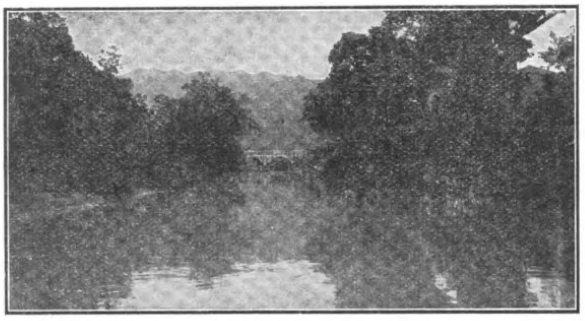


CANTON-KOWLOON RAILWAY—APPROACH TO KOWLOON

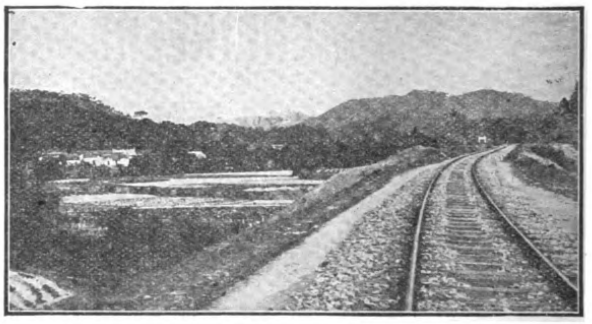


SCENERY NEAR CHEUNG MUK LOW—C. K. RAILWAY

QUICKEST AND CHEAPEST ROUTE BETWEEN CANTON AND HONGKONG THROUGH VARIED AND BEAUTIFUL SCENERY

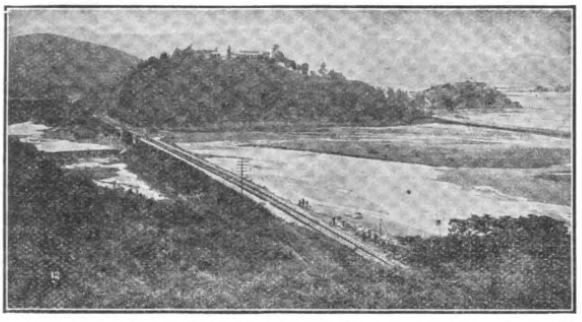


CANTON-KOWLOON RAILWAY—SCENE ALONG ROUTE

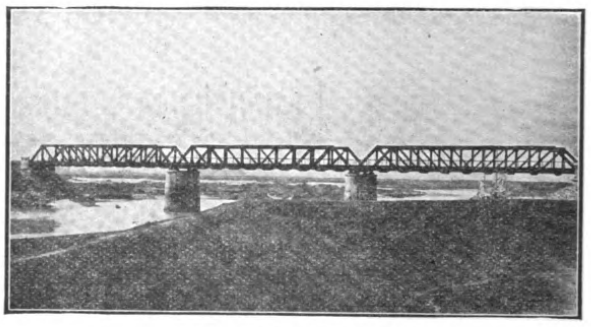


SCENERY ALONG ROUTE

THREE EXPRESS CORRIDOR TRAINS EACH WAY DAILY—HOT MEALS AND OTHER REFRESHMENTS SERVED

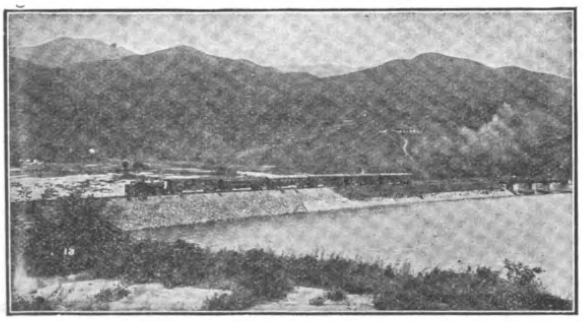


CANTON-KOWLOON RAILWAY—CROSSING TIDE FLATS

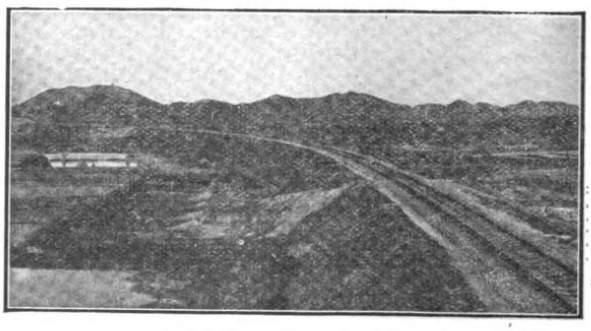


KAN SUI BRIDGE—C. K. RAILWAY

3½ HOURS BETWEEN UP AND DOWN TRAINS FOR BUSINESS MEN OR TOURISTS AT CANTON OR HONGKONG



CANTON-KOWLOON RAILWAY—EMBANKMENT APPROACH TO BRIDGE



GRAND CURVE NEAR SHEUNG PING

TIME TABLE from December 12th, 1917

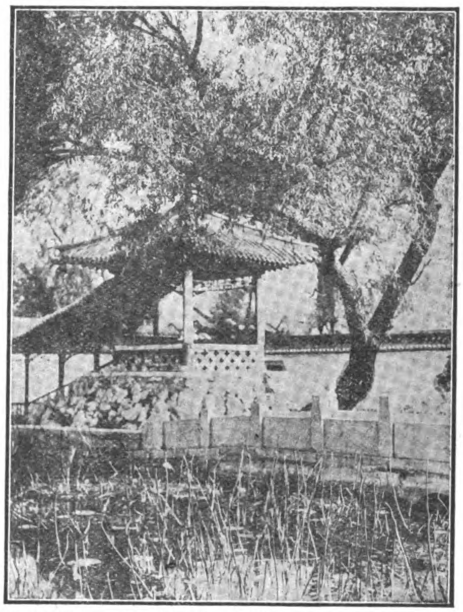
Leave Hongkong (Kowloon) *7.55, 9.15 a.m., *2.35 p.m.
Arrive Canton (Tai Sha Tou) 11.45 a.m., 4.50, 6.42 p.m.

Leave Canton (Tai Sha Tou) *7.25, 8.35 a.m., *3.20 p.m.
Arrive Hongkong (Kowloon) 11.05 a.m., 5.35, 7.00 p.m.

CHINESE GOVERNMENT RAILWAYS

TIENTSIN-PUKOW LINE

HANG HSI TING TZU, TSOW-HSIEN, SHANTUNG



TIEN KUNG SSU, THE LAKE, TSINANFU, SHANTUNG

Mukden-Peking-Kalgan-TIENTSIN-TSINANFU-HSUCHOWFU-PUKOW-Nanking-Shanghai. All by rail only

Being the QUICKEST, SUREST AND MOST CONVENIENT connection between Shanghai on the one and Tientsin, Peking, Kalgan, Mukden and the SIBERIAN ROUTE ON THE OTHER SIDE, this railway represents A SAVING OF MANY HOURS, OF MANY TROUBLES, worries and inconveniences for the busy merchant, the home tripper on short furlough.

The tourist, the globe trotter travelling with more leisure and bent on seeing things, it takes right away from the stereotyped banality of the great ports, takes him through many provinces of the vast republic and shows him SOMETHING OF THE "REAL" CHINA, of its people, its history and its beauty.

Express trains equipped with sleeping and buffet cars run once a week each way between Pukow (Nanking) and Tientsin connecting with the through service of the South-Manchuria and Trans-Siberian Railways.

Through mail trains equipped with BUFFET CARS RUN DAILY EACH WAY between the before mentioned termini.

The crossing over the Yangtsekiang between Nanking and Pukow is effected by means of a modern 100-ton twin-screw ferry boat.

Special facilities and LIBERAL ALLOWANCES for passengers' baggage.

Best of MEALS AND WINES SUPPLIED on the trains.

Sanitation under the personal supervision of a QUALIFIED MEDICAL OFFICER.

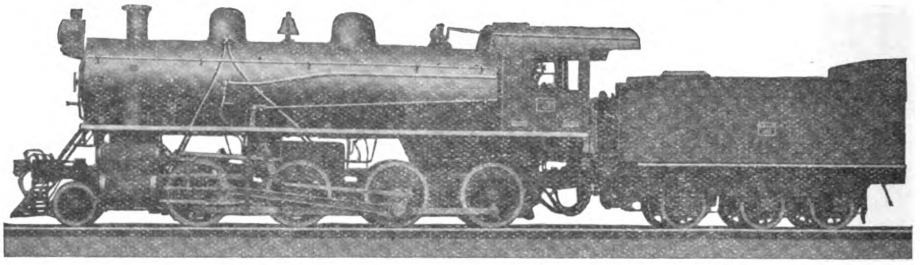
For further particulars apply to THE TRAFFIC MANAGER, Head Office, TIENTSIN, or to the Agencies of Messrs. Thomas Cook & Sons, The International Sleeping Car & Express Trains Co. or the Nordisk Reseburean.

Telegraphic Address: TSINPURY—Tientsin (Tsinanfu, Nanking, Shanghai)

Codes: A.B.C. 5th Edition; Broomhalls' (with Suppl. No. 1)

Tientsin, May 1st, 1915. **The Tientsin-Pukow Railway Administration.**

PEKIN-HANKOW RAILWAY



Total Weight of Engine, 168,000 pounds; Weight on Drivers, 144,500 pounds; Diameter of Drivers, 1,350 mm.; Boiler Pressure, 185 pounds; Cylinders, 22 × 26 inches; Maximum Tractive Power, 37,300 pounds

Ten of these locomotives have been built by the American Locomotive Company for the Pekin-Hankow Railway.

The American Locomotive Company designs and builds locomotives for all classes of service and for shipment to any country. Its locomotives are in successful operation on practically every railroad throughout the World.

Back of each design is the experience gained through continuous locomotive building since 1835, and the construction of over 60,000 locomotives.

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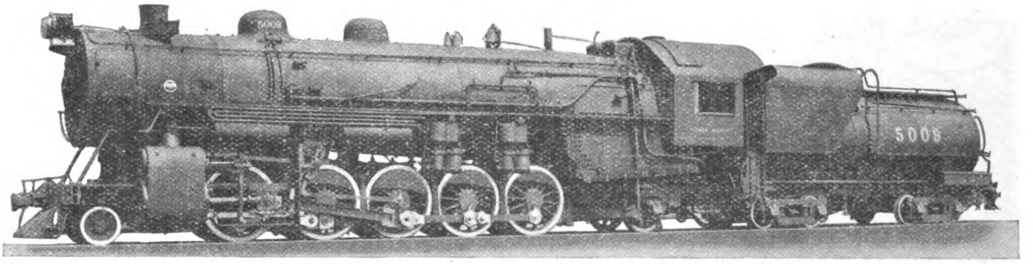
JAPAN— Mitsui & Company, 1 Suruga Cho, Tokyo

RUSSIA— Russian-American Trading Corporation, Nevsky 1, Petrograd

HEAVY FREIGHT LOCOMOTIVES



SANTA FE TYPE LOCOMOTIVE, UNION PACIFIC SYSTEM.

Cylinders—29½ x 30″ **Water heating surface—5,152 sq. ft.**

Driving-wheels, diam.—63″ **Superheating surface—1,262 sq. ft.**

Steam pressure—200-lbs. **Weight on driving-wheels—285,500-lbs.**

Grate area—84 sq. ft. **Weight, total engine—357,600-lbs.**

Tractive force—70,450-lbs.

Locomotives of the Santa Fe (2-10-2) type are being used to an increasing extent on American railways, where grades are steep and heavy trains are hauled at moderate speeds. With the aid of such fuel and labor-saving devices as superheaters, brick arches, mechanical stokers, power reverse gears, etc., these large units are proving efficient and reliable, and can be worked at their full theoretical capacity.

The Union Pacific System last year adopted this type of locomotive for service on its mountain divisions. The design is based on that of Mikado (2-8-2) type locomotives previously built for the same road; and, where practicable, interchangeable details are used in the two types.

Locomotive number 5009, illustrated above, is a coal burner, and is fired with a mechanical stoker. Similar locomotives, equipped for burning oil, are used by the Los Angeles and Salt Lake R. R.

Record No. 88 describes Santa Fe type locomotives.

THE BALDWIN LOCOMOTIVE WORKS

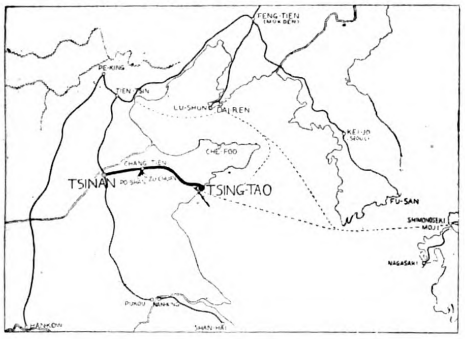
Cable Address: "BALDWIN PHILADELPHIA" **PHILADELPHIA, PA., U.S.A.**

ANDERSEN, MEYER & Co., Ltd., Agents for China, Hongkong, Philippine Islands, Indo-China, Straits Settlements, and Siam. Head Office: SHANGHAI; Branches: TIENTSIN, PEKING, KALGAN, HARBIN. HANKOW, CANTON, HONGKONG, CHANGSHA TSINAN, and VLADIVOSTOK.

SALE & FRAZAR Ltd., TOKYO, Agents for Japan.

SHANTUNG RAILWAY

The Shortest Route between Japan and North China



THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Chowtsun, Tsinan, Tzuchuan, Poshan, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, Dairen; in Japan—Yokohama, Nagoya, Yokkaichi, Osaka, Kobe, Ujina, Moji, Shimonoseki and Shanghai.

Steamer Connections—Steamers leave the wharves of the large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.
For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour station to the wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.
Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) collieries are managed by the Mining Department of the Shantung Railway. At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the Capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.
The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

Train No. 1 leaves Tsingtao daily 8.00 a.m. arrives Tsinan 6.28 p.m.
Train No. 3 leaves Tsingtao daily 5.40 p.m. arrives Tsinan 6.55 a.m.
Train No. 2 leaves Tsinan daily 8.55 a.m. arrives Tsingtao 7.16 p.m.
Train No. 4 leaves Tsinan daily 9.20 p.m. arrives Tsingtao 9.52 a.m.

Local Trains run between Tsingtao and Weihsien, Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30; 2nd class, $7.20.

First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car three yen in silver is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.

Ticket Agencies—The International Sleeping Car and Express Trains Co. and their Agents; Messrs. Thos. Cook & Son and their branch offices in various parts of the world.

Connections at Tsingtao—By steamer with Japan, Manchuria, Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 7.56 a.m. daily, and with Pukow, 8.21 p.m. daily.

BATHING BEACH, TSINGTAO

Description of Tsingtao

Tsingtao is considered the most healthful place in all the Far East. The scenery, including both mountains and sea, is most beautiful. There are quite extensive forest gardens, bits of woodland here and there, and many delightful shady lanes affording most interesting walks through them.

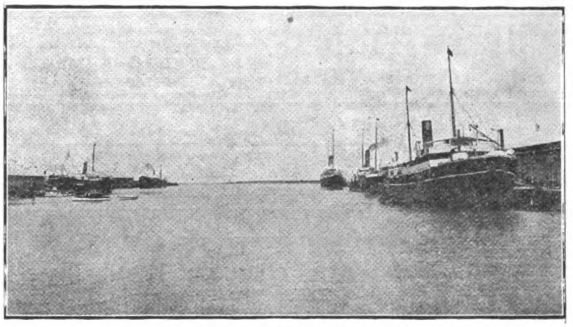
The roads are all broad, with very moderate gradients. They are of both macadamized and asphalt construction for vehicle traffic, while the sidewalks are either paved or concrete. These streets are practically all lined with beautiful shade trees.

The buildings are constructed principally in modern European style, with red tiles and white walls, contrasting pleasantly with the surrounding green mountains and blue sea.

The climate here is fine from spring to autumn, being neither too hot nor too cold. These climatic conditions make the place a favourite summer resort for Europeans from Shanghai, Tientsin, and other places.

The hotels are luxuriously furnished with up-to-date equipment and are under the efficient management of Mr. H. J. Hearne.

The hotel rates are $6.00 and up, per day, on the American plan.



THE GREAT HARBOUR, TSINGTAO

For Further Information, please apply to

THE SHANTUNG RAILWAY ADMINISTRATION, TSINGTAO

CABLE ADDRESS: "SANTETSU" CODES: A.B.C. 5TH ED. A.I.